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**THE  
BRITISH AND FOREIGN  
MEDICAL REVIEW**

**OR  
QUARTERLY JOURNAL  
OF  
PRACTICAL MEDICINE AND SURGERY**

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**EDITED BY  
JOHN FORBES M.D. F.R.S. F.G.S.**

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THE  
BRITISH AND FOREIGN  
MEDICAL REVIEW,

FOR JULY, 1845.

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PART FIRST.

Analytical and Critical Reviews.

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ART. I.

*The Duality of the Mind proved by the Structure, Functions, and Diseases of the Brain, and by the phenomena of Mental Derangement, and shown to be essential to Moral Responsibility.* By A. L. WIGAN, M.D.—London, 1844. 8vo, pp. 460.

"IN looking over the following pages for the purpose of making an index to their contents, I am struck with the conviction, that (were it now to be commenced,) it would be easy to execute the task much better." These are the first lines of the author's preface; and we venture to say that there are none truer in the book. For of all the loose, ill-digested treatises, that have ever come under our critical notice, we think we may fairly say that none have surpassed this. The book, however, will be found pleasant reading enough, for those who think more of liveliness of style, and pointedness of expression, and well-told pretty stories, (with which it is plentifully scattered,) than of understanding the author's aim, and keeping hold of the thread of his argument. But we doubt if any such reader would be able to give a much better account of the book than its title-page sets forth; indeed we question whether he would not be so bewildered, as to have lost even what he had learned from it. And yet, even considered as a scientific production, it has its merits. It is eminently suggestive. It puts many old facts in a new light. It attempts (to say the least) to solve certain difficulties in the explanation of mental phenomena, which have baffled the ablest thinkers. And the author is most firmly and unmistakably convinced of the truth of his positions, and puts them forth with an earnestness and sincerity, which cannot but inspire respect. There is, we think, no *sham* about him; which, in these days of pretension, is saying a great deal. We are not quite so sure, however, as to the genuineness of some of his narratives; in some of which the worthy Doctor seems to have had his evident good-nature a little practised upon; whilst in others, for

which he personally vouches, we question whether a certain liveliness of imagination has not sometimes relieved the bare truth with a little embroidery. This suspicion may seem inconsistent with what we have just predicated, touching our estimate of our author's character. But it is not so in reality; since we are very sure that he thoroughly believes everything that he has written. This conviction, moreover, he enforces so frequently, telling us so often of the long growth and deep root of his opinions, in his mind, that it has much of the appearance of dogmatism. Dr. Wigan *knows* his opinions to be *truth*; and so they are according to the etymology of the word, being "that which he troweth." But because they are *his* truth, there is no reason why they should be *ours*, or *our readers'*, without examination; since certain arguments may arise in our minds, certain facts may have presented themselves to our observation, which may possibly lead us to a different view. This possibility does not seem to have entered into the amiable writer's mind; for having (as he frequently assures us,) conceived his opinions thirty years ago, and given them the full maturity of that lengthened gestation, he seems to have fallen in love with them, (like Prometheus with his animated statue,) and to have allowed them to become so ingrafted with his own entity, that Dr. Wigan and Duality, Duality and Dr. Wigan, will henceforth become inseparable. Assuredly *we* shall not attempt to dissolve this union; satisfied that the two must be coexistent, as long as Dr. Wigan remains in this mortal sphere; and when the union is dissolved, we doubt if the "Duality," in its present form at least, will survive the loss of its affectionate parent.

Now we have, for our readers' sake, endeavoured to seek out the purpose of this book, and to put it into a form in which it may be presented to them; because, as we just now said, it *has* merit, and should not be overlooked by those, who direct their reasoning or their speculations into that dark and intricate track, which connects the domains belonging severally to mind and body. Our sketch of its aim and purport must be anything but an analysis of the book as it stands; since this would be more unintelligible than the work itself; but is intended to represent what, in the phrase of the poets, is the *argument*, whose development is the author's intention. Our labour is in some degree lightened by the summary of propositions proved, or intended to be proved, by the author, which is given in his Fourth Chapter; but it has been in finding the proofs, or what Dr. Wigan conceives to be the proofs, of these, that our labour has been chiefly exercised; and if we have in any way done him injustice, by misrepresenting or insufficiently stating them, we can only regret that we should have been misled by the difficulties to which we have alluded, as arising out of Dr. Wigan's own mode of putting them forward.

Not to weary the patience of our readers, we shall not present them with the whole of Dr. Wigan's twenty propositions at one quotation; but shall first extract and discuss those, which may be regarded as fundamental; postponing for the present those which are erected upon the preceding, and which must fall if *they* are proved to be foundationless. For this purpose, we must slightly change the order in which they appear that all those relating to each division of the subject may be placed together.

"I believe myself," says Dr. Wigan, "able to prove:—

1. "That each cerebrum is a distinct and perfect whole, as an organ of thought.

2. "That a separate and distinct process of thinking or ratiocination may be carried on in each cerebrum simultaneously.

3. "That each cerebrum is capable of a distinct and separate volition, and that these are very often opposing volitions.

4. "That, in the healthy brain, one of the cerebra is almost always superior in power to the other, and capable of exercising control over the volitions of its fellow, and of preventing them from passing into acts, or from being manifested to others.

5. "(14.) That one cerebrum may be entirely destroyed by disease, cancer, softening, atrophy, or absorption; may be *annihilated*, and in its place a yawning chasm; yet the mind remain complete and capable of exercising its functions, in the same manner and to the same extent, that one eye is capable of exercising the faculty of vision when its fellow is injured or destroyed; although there are some exercises of the brain, as of the eye, which are better performed with two organs than one. In the case of vision, the power of measuring distances for example; and in the case of the brain, the power of concentrating the thoughts upon one subject, deep consideration, hard study; but in the latter case it is difficult to decide how far the diminished power depends on diminution of general vigour from formidable and necessarily fatal disease.

6. "(15.) That a lesion or injury of both cerebra is incompatible with such an exercise of the intellectual functions, as the common sense of mankind would designate *sound mind*.

7. "(16.) That from the apparent division of each cerebrum into three lobes, it is a natural and reasonable presumption, that the three portions have distinct offices, and highly probable that the three great divisions of mental functions laid down by phrenologists, are founded in nature; whether these distinctions correspond with the natural divisions is a different question; but the fact of different portions of the brain executing different functions, is too well-established to admit of denial from any physiologist.

8. "(17.) That it is an error to suppose the two sides of the cranium to be always alike; that, on the contrary, it is rarely found that the two halves of the exterior surface exactly correspond; that indeed, in the insane there is often a notable difference, still more frequent in idiots, and especially in congenital idiots.

9. "(20.) That every man is, in his own person, conscious of two volitions, and very often conflicting volitions, quite distinct from the government of the passions by the intellect; a consciousness so universal, that it enters into all figurative language on the moral feelings and sentiments, has been enlisted into the service of every religion, and forms the basis of some of them, as the Manichean." (pp. 26-30.)

Dr. Wigan's mode of demonstrating these propositions is somewhat original. He begins by demanding our temporary assent to them, and promises the evidence hereafter. If that evidence is found to be defective, he tells us to discard and deny his dogmas. If on the other hand, he adduces apparently conclusive evidence in their behalf, we presume (though he does not say so) that he expects us to retain them. Now by this mode we will undertake to prove almost *any* proposition; since it would be difficult to invent one so absurd, that there could be nothing said in its favour. First, (this is Dr. Wigan's recipe,) catch a proposition. Next, assume it to be true. Then bring forward the arguments in its favour. If these fit, your proposition may stand. If they don't, (and he must be but a poor advocate who cannot make them,) your proposition must fall. But so long as, having been once set upon its feet, the idol can keep its balance, (all rude assaults of opposing arguments having been carefully kept out of the way,) so long you are to bow down and worship it. By



the English law, every man is presumed to be innocent, until he is proved to be guilty. In Dr. Wigan's code of logic, everything is true, which has not been proved to be false. Now we shall endeavour to supply the deficiency, by showing that, whatever may be the amount of *probability* to which Dr. Wigan's speculations may lay claim, the very nature of the subject forbids our regarding any of them as *proved*, or even as furnishing a solid foundation on which to raise further argument. What, for example, can be more inconclusive than the following argument from analogy, which we find at the outset?

"To me it seems that the provision of two distinct and perfect brains for this object is like the provision of two eyes and two ears. In thought, as in vision and in hearing, each organ may suffice to perform perfectly all its appropriate functions, yet the two when in health produce only one result. We have only one sound with both ears, each of them hearing it at the same time. We see only one object with both eyes, each seeing it separately at the same time. We carry on only one train of thought in both brains; each thinking it at the same time; all this, however, is contingent, not only on the perfect health of the organs, but on their due exercise and cultivation. In disorder or disease, brain, eye, and ear, convey separate, distinct, conflicting ideas,—one, or both, necessarily erroneous." (p. 35.)

Does Dr. Wigan seriously mean that it is the eye which sees, and the ear that hears, and that the *sensorium* has nothing to do with the process? Is he ignorant that what we see is *not* the image formed upon *either* of our two retina, but that the mind, receiving both, blends them by an unconscious act into a representation of the object, which (if this be not very remote,) neither eye could alone communicate? Would not the connexion of one of our eyes with another sensorium, if such a thing can be deemed possible, give rise to an impression in *that* sensorium, thus arousing a second consciousness? And is not the very *oneness* of the representation we derive from the blending of the two images which are pictured on the retinae, a powerful argument for the unity, and *against* the duality of the mind? To us it seems that the first part of this argument of Dr. Wigan's entirely fails; and that all the information furnished to us by our senses tells of a mind "one and indivisible." Nor does the second part strike us as more successful. For if one eye is so injured or defective, as to convey sensations which are altogether different from those of the other, the case is precisely the same as when the two eyes are directed to different objects, (which may be easily accomplished,) or when the two ears have different sounds conveyed to them. For the *one* mind is then conscious of *two* distinct sensations, and will be perplexed by them if they are discordant, unless the attention be fixed upon either of them, separately, which the mind has the power of doing, in the same manner as it can attend to any one out of a *large number* of distinct sensations, conveyed by the several organs of sense. We shall hereafter see that this state of *attention* is regarded by Dr. Wigan as attributable to the consentaneous action of both hemispheres; but he does not explain to us how the attention of either hemisphere can be fixed upon the impressions conveyed by the nerves of the opposite side, since, according to him, the *corpus callosum*, instead of being a commissure or bond of union between the two hemispheres, as commonly regarded, is a wall of separation between them. (p. 16.) He distinctly states that "the fibres from each half of the brain only go to the

middle line, and do not pass over to the other side ;" a somewhat dogmatic assertion for a man who prefers no claims to anatomical authority. But he admits in his preface that his assertions respecting the structure and office of the corpus callosum require modification ; leaving us much in the dark, however, to what extent, or in what manner, this is to be understood ; and only intimating that his views as to the nature of the mind are not thereby affected.

The most important evidence adduced by Dr. Wigan in support of his views, is that derived from cases in which one of the hemispheres has been destroyed by disease or injury ; and in which neither loss of intellectual power, nor any functional disturbance, has been apparent. Of well-authenticated cases of this kind, there is certainly no want ; and Dr. Wigan is quite justified in stating that one such case is quite as conclusive as a hundred, in proving that each hemisphere, (or, as he prefers to call it, each brain,) is a perfect instrument of thought and ratiocination. But the proof is wanting that a separate mind, that is to say a *distinct consciousness*, can ever at once be present in each. We may be misrepresenting Dr. Wigan in saying that he affirms this ; but if we do, it is his own fault. Two *consentaneous volitions*, in our apprehension, involve two *distinct centres* of power, two *egos* in one person ; and two *egos* must have two *consciousnesses*, as distinct as those of the Siamese twins. We do not think that there is any evidence for the allocation of the *consciousness*,—which we take to be the essence of mind,—in the cerebral hemispheres. The study of comparative anatomy, physiological experiment, and pathological investigation, seem to lead irresistibly to the conclusion, that these organs are but the instruments of but *one class* of mental phenomena, and that they are *not* the peculiar seat of consciousness ; in other words, that the sensorium is *not* in them. Hence to found any argument as to the duality of the *mind* upon the repetition of parts in the two *hemispheres*, and the power of either of them to act alone, seems to us utterly illogical. The mind *may*, and probably *does*, possess the power of using *both* as instruments of intellectual operations, to arrive at *one* result, in the same manner as it uses both eyes to look at one object ; and there seems to us no more reason to suppose that, in any ordinary acts of mind, only one cerebrum is acting, and that for *attention* both are required, than there is to suppose that only one eye is employed at a time in ordinary vision. Even discrepant actions of the two hemispheres may, for anything we know to the contrary, be harmonized and blended in the central seat of mind ; in precisely the same manner that the two flat pictures formed in the retinæ are fused, as it were, together, so as to form the visual image of a solid. All analogy seems to us in favour of this view. We do not assume it as *proved* ; but it is at least as *probable* as Dr. Wigan's ; and harmonizes better with what we know of mental phenomena. It is possible that Dr. Wigan may say that there is no essential difference between his view and ours. If there be not, why then we cannot see the novelty of Dr. Wigan's ; since ours is nothing different from that which physiologists have been long accustomed to maintain, only, perhaps, somewhat more precise in its form.

Dr. Wigan has not referred to the evidence of comparative anatomy as either supporting or opposing his views. To us it seems that the facts which it supplies afford him no support ; and that some of them rather

militate against his doctrines. In every instance in which there is a lateral doubling of the nervous centres, there is a well-marked *commissural* band, which evidently has for its office to connect the operations of the two sides. The passage of fibres from one lateral half to the other, can be readily and distinctly traced; and we see no reason whatever, from the actions of the lower animals, to imagine that two opposing trains of thought are ever going on at once in their minds, or that two volitions are struggling for mastery over the body. Now in the radiata, the ganglia which stud the nervous circle appear to be all equal in their endowments. Thus in the star-fish, the whole body being constructed upon a perfectly symmetrical plan, every one of the radii resembles the rest; the mouth is in the centre, and all the organs of sensation and motion are uniformly disposed around it. Hence we cannot regard any of the ganglia, (which are never less than five in number,) as having a presiding function over the rest, or as being the peculiar seat of sensation; and there is evidence that one or more of them may be removed, without any great discomposure of the general functions of the body. Hence, on Dr. Wigan's hypothesis of duality as applied to man, the mind (such as it is) of the five-rayed star-fish must be *quinary*; and that of the twelve-armed species must be *duodecimal*. It may be difficult to prove that this is *not* the case; but it would seem to us still more difficult to prove that it *is*; and in default of that proof, the matter must rest as it was before Dr. Wigan took it up.

After all the pains we have taken to arrive at Dr. Wigan's exact opinions as to the amount or degree of distinctness between the operations of the two halves of the brain, we can find nothing clearer than the following passage.

"One of two things must be: either each hemisphere or cerebrum is a perfect whole, capable of exercising all the functions which, in the aggregate, form *the mind* of the individual; or else each half must exercise some of these functions, and the other half the remainder, so as between them to make up a mind. There is positively no other thing possible, the mind is performed completely by each brain, or jointly by the two." (p. 47.)

Now it seems to us that, if the first proposition be true, (as Dr. Wigan asserts,) there are in reality *two minds*; and that the alternative is not confined to the second. For if, as we have suggested, the essential seat of mind be not in the cerebral hemispheres at all (and the absence of any representative of these hemispheres in the greater number of invertebrata seems decisive in favour of such an idea,) and if those organs be only employed as its instruments in a certain class of operations, it seems quite legitimate to admit that they may usually work together as a whole, whilst either is capable of operating alone. Two analogous examples,—the one drawn from the inorganic, the other from the organic world,—may render our meaning more apparent. If a bar magnet,—which has, of course, the north pole at one end, and the south pole at the other,—be cut or broken across the middle, each half becomes a perfect magnet; a new north and another south pole manifesting themselves at the points of separation. Yet the first magnet was not made up of the two which were formed by the division; it was *one*,—capable, however, of being separated not only into two, but into any number of minor magnets, each complete in itself. Again, most of our readers are probably familiar with the circulation of fluid, which takes place in the chara, within the long cells that form its

stem and branches. The fluid passes along one side of each cell, from end to end; then returns along the opposite side; and then again follows its first track. Now if a ligature be put round the middle of the cell, so as to divide it into two, this will not check the circulatory action; on the contrary, it will establish two currents, one in each cell; and these will go on as regularly as if the interruption had not been made. Here, then, are two instances in which we can divide a *whole* into parts, of which each shall perform its functions; and yet the functions of the whole were neither the mere aggregate of those of the parts, nor had the functions of the parts an independent existence, until the division was made. Thus even if Dr. Wigan could prove that, by slicing the nervous centres down the median line, so as to isolate them completely, he could make two sentient beings out of one, he would not prove that two distinct centres of mental action *previously* existed in the individual.

We have now considered the entire anatomical argument adduced by Dr. Wigan in proof of his fundamental position, that "each cerebrum is a distinct and perfect whole as an organ of thought;" and have endeavoured to show that it affords no sufficient ground for this assumption,—because, in the first place, there is no proof of the localization of *consciousness*, the mainspring (as it were) of all mental operations, in the cerebrum at all, but very much that indicates the contrary; and because in the next place, the complete duality of function is not required by the fact of the repetition of the same parts in both, nor by the circumstance that when one hemisphere is in abeyance, the remaining one can execute the operations of the entire organ. We next turn to the metaphysical part of the question; and shall inquire how far Dr. Wigan is justified in his twentieth proposition, (quoted by us in page 3, as the 9th,) that every man is occasionally conscious of two volitions, very frequently of a conflicting nature, quite distinct from the government of the passions by the intellect.

This assertion we cannot meet in any other way than by a simple denial. We have long been in the habit of analysing our own mental operations, and of endeavouring to determine their sources; and we have never felt the necessity of having recourse to such an idea as that of two *volitions*, which (as we have already remarked) seems equivalent to that of two *egos*. It appears to us that all human actions (excluding the reflex) may be regarded as either *automatic* or *voluntary*. The former group includes those which are separately classed as *consensual*, *instinctive*, and *emotional*, together with some which were once voluntary, but which have become *habitual*. The will may generally restrain these actions; but if the will be weak, or the stimulus which prompts them be strong, they may be performed in spite of it. On the other hand, all *voluntary* actions are the result of intellectual processes, which end in a *determination* that operates upon the motor nerves. The nature of this determination depends entirely upon the *motives* which have been in operation; for we believe it to be an established axiom amongst metaphysicians, that any two sane minds *must* arrive at the same conclusions, provided the motives are the same. Now it is very well known to every one, that these motives may be numerous and conflicting; in fact there is no limit to their possible number, and to the variety of their direction. Sometimes they act in *direct* antagonism to one another, and leave no middle course; thus the Acquisitive propensity may produce a desire to commit a theft, whilst the Conscientiousness acts to restrain it.

The determination or *will*, resulting from the operation of these conflicting motives, will be *for* or *against* the action, according as the acquisitiveness or the conscientiousness be stronger. The conscientiousness being unduly weak, or the acquisitiveness being unduly strong, the determination will be in favour of the action; which the *will*, acting upon the motor organs, then puts into operation. Of course, if the conscientiousness be victorious the result will be the contrary. We have here supposed only the simplest possible case; that in which two opposing propensities only are in operation. But the motives are seldom in reality so easily analysed. Other propensities may be in action; and even the same propensity may suggest two opposing motives. Thus Benevolence may suggest to the possible thief that the individual whom he is about to rob will be injured thereby; whilst Selfishness will lead to the consideration of the benefits he will himself derive from the appropriation; or even Benevolence itself may urge to the theft, by representing the good which may be done to others with the property. Again, the motives may be themselves more purely the result of reasoning processes; as for instance, when the chances of detection and punishment, or of escape and immunity, are weighed against each other. Here, then, are a large number of *pros* and *cons*, the estimate of which will vary according to the nature of the circumstances, and the habitual strength of different propensities. Two individuals, in precisely the same circumstances may arrive at an opposite conclusion; because the very same conditions will be presented to their intellect as motives of different strength, according to the relative development of the different propensities which they call into action—these last, not the circumstances themselves, being the real weights in the scale. For in appreciating the value to be attached even to the results of reasoning,—as upon such a subject as the probability of detection and punishment,—it is the degree of the moral feeling *fear*, that will govern the weight of the motive. The hitherto virtuous youth, placed in circumstances of temptation, knowing that detection must blast his character and be fatal to his prospects in life, will experience this motive with much greater force, than the practised thief, who has only to look for a few months of confinement and hard labour, a slight and not always unpleasant variation from his ordinary course, as the consequence of his misdoing.

Now in the case we have supposed, there is no middle course. “To *do*, or not to *do*, that is the question.” How many a fierce conflict has been sustained, of which the world knows not, between the two opposing classes of motives, in minds which are commonly regarded as neither exposed, nor likely to yield, temporarily to such temptations! How many a time has the will given itself up to the sway of the evil propensity, the hand been stretched forth to grasp the tempting object; when some new motive, or the sudden upstart of one that had been already repressed, some pious precept, or some lingering memory of affection, has come in time to change the course of the will, and to save from the commission of crime, drawing back the hand, and causing flight from the scene of temptation! We remember to have somewhere read the story of a poor barber, who was summoned to perform his office upon a wealthy man, upon whose table lay a large amount of gold. After going through the preliminaries, and applying his razor to the chin of his subject, the operator precipitately fled, leaving his work unfinished. On being summoned, and interrogated

as to the cause of his strange conduct, he stated that the sight of the glittering coin, the thought of his starving family, the facility with which he might possess himself of the money by the murder of the gentleman, altogether tempted him so strongly, that he could not have restrained himself from the commission of the crime, if he had continued in the room ; and he therefore obeyed his good impulses, by seeking safety in flight.

Now in all such cases as this, Dr. Wigan would have us believe, that the two brains (as he calls them) are at war with one another, and that the strongest gets the victory. Of this, there seems to us an utter absence of proof ; and the hypothesis is attended with numerous difficulties. For instance, we must suppose that the *pros* are all mustered on one side of the head, and the *cons* on the other. What should determine this arrangement, we must confess ourselves unable to see. In any case in which one hemisphere is functionally in abeyance, no such conflict as this could, on Dr. Wigan's principles, take place ; and either the propensity would act unrestrainedly, or it would not act at all. The hypothesis is completely unnecessary ; because if it be once conceded, (and this Dr. Wigan does,) that the different propensities have their seat in different parts of the brain, and that all the organs are present in each hemisphere, the conflicting actions we have alluded to may take place just as well in one hemisphere, as in two conjoined.

Moreover, we think the fact, which must be within the experience of every one, that the mind may be acted upon not in *two* opposite directions only, but in *many* different ones, conclusive against this theory. Because if two brains are required for a *pro* and *con* argument in regard to any particular action, half-a-dozen brains must be wanted, when six different courses of action suggest themselves to the mind, which is urged by a distinct set of motives in reference to each.

We consider Dr. Wigan's mistake, for such we cannot but regard it, with respect to the possible existence of two volitions in the mind *at the same moment*, as a most fundamental one ; vitiating his whole train of reasoning. That different and opposing volitions may succeed each other with extraordinary rapidity, is a fact perfectly clear ; but that two *volitions* are ever in the mind at one period, and carry on a contest there, appears to us totally irreconcilable, not only with the experience of every one, (when carefully analysed,) but also with the idea of single individuality. We believe that in all instances, in which two volitions appear to be acting at once upon the body, or in which a series of apparently voluntary actions is taking place when the mind is occupied upon a different subject,—it is capable of proof that one of the actions is referrible to the automatic group already indicated, or that it has become so habitual, as to be performed through the same channel. This we take to be the case, for example, in regard to the performance of a piece of music whilst a conversation is being maintained ; or the act of reading aloud, when the mind is wholly bent upon some train of thoughts of its own.

Dr. Wigan may perhaps say, that we differ in regard to the use of the term *volition* ; and that what *we* have described as powerful or irresistible *motives*, are what *he* means by *volitions*. We shall therefore attempt to explain our meaning more clearly ; and this we can do more satisfactorily by a *simile* than by a definition. Let us suppose a mass of matter acted upon by two forces, A and B, which pull it in contrary directions ; the

mass will remain undisturbed, if these forces be equal ; but if either predominate, it will move towards the side on which the traction is the strongest. The *forces* are, in our apprehension, the *motives* ; the *resulting movement* represents the action of the *will*. Now there may be any number of distinct forces, tending to draw the mass in different directions ; and these, too, may balance one another so exactly, as to produce no movement ; but, if one set predominate, the mass will be drawn towards them, in a direction which is called the *resultant*, being found by a process which takes into account the combined amounts and directions of all the different forces. Just so is it in regard to the operations of the mind ; for however diversified the motives, and however numerous the modes of action towards which they severally draw, the volition which results from them is as *single* in its nature as the resultant in mechanics, and is, like it, the result of the combined operation of all the forces in action. The great difficulty in forming correct judgments in complex cases, is *not* in striking the balance between the different motives, when their respective cogency has been determined, but in assigning to each its determinate weight, and in taking into the account everything that ought to have a bearing upon the decision,—a thing not by any means so easy of accomplishment in morals as in physics.

We trust that we need not urge anything further upon this point ; but that we have succeeded in communicating to our readers the chief grounds of our belief, that none of the *ordinary* mental phenomena require the hypothesis of “two distinct brains,” and that many of them are inconsistent with it. We shall now pass on to consider the application of Dr. Wigan’s hypothesis to these abnormal phenomena of mind, which he regards as peculiarly elucidated by it ; stopping for a few moments, however, to notice a case, which seems to be given by Dr. Wigan as one of “double volition ;” although we must confess ourselves at a loss to discover in what part of it any such double volition is indicated. This case (pp. 58 to 64) is too long for quotation, and we can only indicate the heads of it. We much doubt whether it be not the relation of the worthy Doctor’s own experience ; so much does the form of narration (avowedly furnished by the patient) bear the impress of Dr. Wigan’s peculiar style ; and such a devout believer does the “intimate friend” declare himself to be in the duality. He describes himself as having always been morbidly sensible to misconstruction ; and as having been placed in situations which gave the appearance of guilt, or, at any rate, of culpable indifference to opinion. When alone and in depressed spirits from diffused gout and dyspepsia, he would sink into a reverie about some imaginary crime ; and would plan the means of defending himself. “The whole of this time I knew perfectly and continuously that it was an entire delusion ; . . . yet, on going into agreeable and elevated society, and taking two or three glasses of wine, I generally became not merely cheerful, but almost hilarious.” On one occasion, “a sudden combination of unfortunate events having produced great aggravation of my habitual distress from moral and physical causes, I felt myself entirely unable to control the expression of my mental agony in the presence of persons from whom it was of the greatest importance to conceal it.” Walking down to the sea-shore, his mind in a perturbed and excited state, and his eye catching the long stream of silvery light on the water, reflected from the moon, he said to himself almost unconsciously, “that shining path is the road to happiness, I will follow it.”

Seeing a boat on the beach, only a little way above the water, he felt impelled to launch it, and to follow this direction. A conviction of the absurdity of this proceeding, and of the delusive nature of the impulse, on the other hand, tended to restrain him, and at last, finding no other way of checking himself, he threw himself on the ground, and kicked his heels in the air, ("my feet," he says, "continued to imitate the action of walking.") until, after the lapse of an hour, he became tolerably well cooled down, and was able to get up and walk home, without again approaching the seducing boat. Now this case appears to us perfectly simple. The disordered condition of certain feelings, resulting from the combined action of external causes and bodily ailment, caused the mere sight of an object to suggest an action, and even to urge towards it, which his better feelings and reasoning powers told him was absurd. The two sets of motives had a fierce conflict for the mastery; his volition first yielded to one, and was then overcome by the other; and at last, like the barber, he sought safety by voluntarily interposing a difficulty sufficient to prevent the accomplishment of the impulse.—We see no difference between the case here alluded to, and the very frequent one of temptation to suicide, as a consequence of mental depression. The propensity may result from very trifling causes, acting on a mind depressed through bodily disorder; or it may be the consequence of severe mental distress, arising entirely from external causes; or it may be simply the result of the imitative tendency; in short, it may arise from very numerous motives; and numerous motives will present themselves of an antagonistic character. The relative strength of these will decide the *will*; which may be swayed to one side or the other, according to the vividness of particular impressions. Not unfrequently, the resistance long kept up by the better feelings will be overcome, by the occurrence of a tempting opportunity; the temptation thus added makes the urgency so great, that the antagonism is overcome, the fixed determination is made to execute the act, and the will performs the requisite movements. Now here, we can see no proof or indication of a double volition. The contest between the two opposite lines of conduct may have been long raging; but it is really a contest of numerous diversified *motives*; and a precisely similar struggle may take place, as we have already remarked, in cases where the choice is not restricted between *two* things, but where *several* different courses present themselves for the decision of the individual. If Dr. Wigan had borne this fact in mind, we think that he could not have come to the conclusions which he has expressed.

The following are the propositions in which Dr. Wigan develops the application of his views to the better understanding and treatment of insanity.

10. "(5.) That when one of the cerebra becomes the subject of functional disorder, or of positive change of structure, of such a kind as to vitiate mind or induce insanity, the healthy organ can still, up to a certain point, control the morbid volitions of its fellow.

11. "(6.) That this point depends partly on the extent of the disease or disorder, and partly on the degree of cultivation of the general brain in the art of self-government.

12. "(7.) That when the disease or disorder of one cerebrum becomes sufficiently aggravated to defy the control of the other, the case is then one of the com-



monest forms of mental derangement or insanity ; and that a lesser degree of discrepancy between the functions of the two cerebra constitutes the state of conscious delusion.

13. "(8.) That in the insane, it is almost always possible to trace the intermixture of two synchronous trains of thought, and that it is the irregularly alternate utterance of portions of these two trains of thought, which constitutes incoherence. That of two distinct simultaneous trains of thought, one may be rational and the other irrational, or both may be irrational; but that in either case the effect is the same, to deprive the discourse of coherence or congruity. Even in furious mania, this double process may be generally perceived; often it takes the form of a colloquy between the diseased mind and the healthy one, and sometimes even resembles the steady continuous argument or narrative of a sane man, more or less frequently interrupted by a mad man; but persevering with a tenacity of purpose in the endeavour to overthrow the intruder.

14. "(9.) That when both cerebra are the subjects of disease, which is not of remittent periodicity, there are no lucid intervals, no attempt at self-control, and no means of promoting the cure; and that a spontaneous cure is rarely to be expected in such cases.

15. "(10.) That, however, where such mental derangement depends on inflammation, fever, gout, impoverished or diseased blood, or manifest bodily disease, it may often be cured by curing the malady which gave rise to it.

16. "(11.) That in cases of insanity not depending on structural injury, in which the patients retain the partial use of reason (from one of the cerebra remaining healthy or only slightly affected,) the only mode in which the medical art can promote the cure beyond the means alluded to, is by presenting motives of encouragement to the sound brain to exercise and strengthen its control over the unsound brain." (pp. 26-28.)

That the phenomena of insanity, were they exactly as Dr. Wigan represents them, would be easily and on the whole satisfactorily explained by the "Duality" theory, and would afford support to it, must be apparent to the reader of the foregoing quotation; in which a very ingenious case is presented for our consideration. And Dr. Wigan certainly displays considerable art in the manner in which, having in *limine* seduced his reader into a provisional belief, he gradually fences him in by accumulating arguments, until he finds it difficult to extricate himself. We may even confess that, having been ourselves desirous to do him full justice, we yielded ourselves in the first instance to his enticements; and that we closed the book after a first perusal with the feeling that he had made out a probable case. But being determined to do justice to ourselves and our readers, as well as to our author, we recommenced our examination more critically; and the result has been very different. Dr. Wigan's mode of argument seems to us like that of a besieging general, desirous of taking a fortress, who should say to its commander,—"*We cannot try our strength fairly, whilst you remain shut up in your castle; do me the favour to put me in possession of it, and to take my place, and then see whether I can hold out against you.*"

The point which struck us, on our first examination, as most in Dr. Wigan's favour, is the very frequent existence of an insane propensity or delusion, in conjunction with a conviction of the morbid nature of the feeling, which gives to the individual the power of *acting* sanely. The idea that, in such cases, the disordered condition is confined to one cerebral hemisphere, and that the other, being still unaffected, controls its impulses,—has, to say the least, a strong *appearance* of probability. But we shall try to show that it is no more than an appearance, and that it will not

stand examination. Let us take, as the simplest case, the existence of some exaggerated *propensity*, which prompts to a certain course of action; the individual is aware of the disorder, restrains himself from yielding to the propensity, keeps out of the way of temptation, and endeavours to conceal his state from observation. As the *acquisitive* propensity has recently been brought rather strongly before the public, we may take this as an example. Now the individual troubled with this unfortunate propensity may be in other respects a very moral benevolent person, who would shudder at the thought of wilfully violating the Divine law or of injuring man, and would not less dread the shame of exposure before his fellow-creatures; and yet the propensity may be so strong, as to be almost uncontrollable by these or any other motives, giving rise to the most harassing conflicts and the deepest anguish. Now in such a state, what is it that arms the will to resist the imperious mandates of the exaggerated propensity? Is it the *moderate* acquisitiveness of *one* side, keeping down the *excessive* acquisitiveness of the other? Surely not. It is the force of other propensities, and of reason, which are set up as antagonists; and which, if strong enough, keep down by their united power the struggles of the insane tendency. The human mind has the power of strengthening certain tendencies, by frequently bringing them into use, and of weakening the force of others, by compelling them to inaction; just as it can alter the configuration of the body, strengthening some parts and weakening others, according as it brings the muscles of the former into frequent and powerful action, and keeps those of the other in repose. This is the state in which man's power over himself in preventing insanity, is most strongly exhibited. But the hypothesis of the two cerebra does not help us in the least to explain it. If the control of the disordered propensity be not exercised by the sound propensity on the other side, but by the antagonism of *another* set of motives,—and all experience shows that this last is the case,—then it may be just as safely affirmed that the front of the brain is acting against the back, or the vertex against the base.

Dr. Wigan seems to exclude from his category the instances in which the animal passions prompt to a certain course of action, from which they are restrained by the will; but we cannot see in what the essential difference lies, between the excessive development of the sexual propensity, for example, and the exaggeration of any other tendency. This may become so strong as to be ungovernable by any restraint, save physical coercion: but suppose it to stop short of this, and to be restrained by the action of moral considerations upon the will;—surely in such a case there is no reason whatever to believe, that one half of the encephalon is disordered, and that the sound side perceives the morbid state of the other. Then why should this supposition be entertained regarding other propensities and feelings, less directly *animal* in their tendency, but precisely analogous to them in the mode in which they operate on the intellect?

Now we are well convinced that the progress of our knowledge in regard to insanity, will in time enable us to see, that nearly, if not quite, all the cases generally set down as monomania, really consist, in the first instance at least, of disorder of one or more of the *moral* feelings, tendencies, or propensities; and that the *intellectual delusion* which is frequently the prominent symptom of such affections, is the consequence of this. We believe that, to this conclusion, those who have the best opportunities of

observation, are gradually tending; and that it must ultimately have an important influence, both on our therapeutic measures, and on our views of the ordinary or normal operations of the mind. The progress to such states, from those which we have just been describing, is perfectly simple. The insane propensity gains strength, whether from the want of self-control and the habit of yielding to its promptings, or from the progress of the physical change to which it was due in the first instance; the will can no longer be kept under the control of the opposing feelings, and yields itself up unresistingly to the domination of the tyrant; and all the actions exhibit its influence. Now the trains of thought, which occupy the mind in the intervals of action, are no less under the dominion of this morbid power, than the will itself. We possess in health (and nearly all metaphysicians are agreed that this is a distinguishing feature of the *human* mind,) a considerable power over the sequence of our thoughts; and so long as the mind can view things as they really are, if it be only at intervals, it can correct the representations of them which are made through the distorted medium of its disordered feeling. But when this feeling gains so much comparative strength,—whether by the weakening of the rest of the mental fabric, or by a positive increase in itself,—as to take full possession of the thoughts, it represents every thing that takes place around in a wrong light, and furnishes wrong data to the reasoning processes; and even the memory and experience of the past are prevented from furnishing the correction they might be expected to afford, since they too are viewed through the same distorted medium.

In the comprehension of such cases, we cannot see that the hypothetical “duality” gives us the least assistance. If we may localize the passions, propensities, and moral feelings of all, as the phrenologists tell us,—or even if we only go so far as to admit that there is such a localization, without admitting that it has yet been satisfactorily made out,—the action of the brain in this train of occurrences may be explained just as well (or we should say much better,) on the hypothesis that both the corresponding organs are affected together, but are in the first place antagonized by others,—as on the idea that the right and left brains are quarrelling for mastery. And *our* idea would further derive confirmation from the fact,—which opposes Dr. Wigan’s in the same degree,—that mental conditions of the nature we have been describing are very frequently connected with a disordered state of the system in general, which will act upon the brain through the blood. Now such affections, whether resulting from the retention of excretions, or from the introduction of new morbid elements into the blood, must be admitted to be most probably *symmetrical* in their action as respects the brain; and we cannot admit that they are almost uniformly otherwise, without strong proof. Let Dr. Wigan observe the gradual access of the state of intoxication, as glass after glass of wine mounts (to use a phrase which is probably as accurate in a physical sense as it is in its common meaning,) into the brain. At the beginning of the process, the *patient* feels nothing but a pleasing excitement; his ideas flow more freely and strongly than usual, and he possesses an unwonted command of language, which enables him to express them with fluency. He is perfectly aware of his situation, and rejoices in it; and either aims at keeping up the same pleasing excitement by continued libations; or, if his higher moral feelings predominate, he subdues his sensual inclination

by their aid, and indulges no longer. According to Dr. Wigan, he is, at this stage *drunk* on one side of his head, and *sober* on the other. If he proceed, his ideas become altogether confused, his expressions incoherent, he loses his control over the current of his thoughts, and he becomes for the time insane; not, however, having his mind possessed by any fixed delusion, because his madness results from a disturbance of all his faculties, sensory, moral, and intellectual, rather than of any one. He then becomes drunk on *both* sides. Now this we hold to be a most legitimate illustration of Dr. Wigan's theory; and cannot charge ourselves with the least violence in so applying it. Many of our readers, we think, will consider its unsoundness thus proved, as by a *reductio ad absurdum*; but if Dr. Wigan and his partisans affirm that the representation we have given is a correct one, and that a man in a state of incipient intoxication is drunk on one side and sober on the other, we then ask for the *proof* of that, which all analogy opposes; namely, the restriction of the *alcohol* introduced into the blood, to *one* side of the brain, though even for a short time only.

We may sum up our argument as follows: instead of being required by the phenomena of conscious delusion, and the mental operations connected with it, to believe in the duality of the mind, and the complete independence of the two sides of the brain, we think them even more satisfactorily explicable on the idea, that the mind and the brain alike consist of one whole; and that where an opposition exists between the sane and the insane tendencies, it is *not* between the two tendencies or faculties of the *same* kind allocated in opposite sides of the brain, but between the morbidly-exaggerated tendencies on the one hand, and those of an *opposite* character, which should keep them under control, and which may be allocated on the same side of the brain.

There is one more class of phenomena, on which Dr. Wigan lays considerable stress; but which we do not consider that his theory at all helps to explain; that, namely, of spectral illusions. These are delusions of *sense*, in the same manner as those to which we have already alluded are delusions of *intellect*. So long as the mind has power, by dwelling on its past experience, to prove to itself the fallacy of their indications, so long they may pass and re-pass without disordering its other processes. But let it be weakened from fatigue or depression, so that the comparison cannot be efficiently made; and it yields. We perceive no more reason for supposing that one cerebrum, in such cases, *sees* the objects, and that the other reveals the fallacy of the appearances, than for supposing that, when Dr. Wigan goes to see a conjurer, who induces him to place a bank-note in his hands and then apparently burns it, one of the worthy Doctor's brains witnesses the combustion, whilst the other tells him that the conjurer knows better than thus to sacrifice his property. The only difference is that, in the one case, the cause of the illusion is an external sleight of hand, whilst in the other it is some change within the individual. In every other respect, the case seems to us the same.

We need not dwell upon the conflicting tendencies, so frequently and strikingly manifested in insanity, which are adduced by Dr. Wigan as main supports of his theory; for they are only those of the sane mind in an exaggerated form; and all that has been said in reference to the latter is, therefore, equally applicable to them.

Perhaps the most important kind of evidence in favour of Dr. Wigan's views, is that which is afforded by the phenomena of sleep-waking, and of double consciousness;—or as Dr. Wigan prefers to call it alternate consciousness, "the person being in a manner two individuals, as far as sensation and sense of personal identity are concerned." Some forms of these remarkable conditions, we noticed at some length in our last Number. The most curious, perhaps, are those in which the two states are so distinct, that not a thought or memory of the one passes into the other. The following classification of *analogous* phenomena, formed by Dr. Wigan for the better explanation of his views, expresses, we believe, the principal forms of those disordered states of mind, which throw most light upon these peculiar conditions.

"A. We know by innumerable examples, that a sudden physical shock, or a blow on the head, shall reduce the healthy and acute brain of a profound scholar to a state wherein he has all the mental characteristics of childhood—is pleased or offended by trifles, so apparently insignificant that in his previous state they would not excite the most evanescent attention—his sensations and perceptions are still perfect, but his reasoning powers are gone.

"B. In other cases a similar accident shall obliterate portions, or the whole, of his acquired knowledge—he will lose, for example, one language and retain others, or he may lose all; and on his recovery from the physical effects of the accident, he has to begin life again, and proceed to acquire information in the same mode as a child, though with a much slower progression.

"C. These effects arise sometimes also from a moral shock, such as the sudden communication of afflicting news—terror—detection in crime, or any other analogous cause, equally or indifferently whether the cause be moral or physical; the brain is entirely spoiled, temporarily deranged, only slightly injured; or in gradation from one to the other, losing one or more of its functions, and one or more portions of acquired knowledge.

"D. After such effects have lasted a considerable time, and have or have not been accompanied or followed by any of the usual forms of mental aberration, or of imbecility, the whole powers of the brain may be restored either gradually or in an instant—the watch may resume its motion." (p. 395.)

It is only necessary, according to Dr. Wigan, to explain these facts according to the Duality-theory, to get at the whole rationale of alternate consciousness; which he believes to be comprised in the following propositions:

"1. If then my doctrine of the entire completeness and sufficiency of each brain as an instrument of mind be firmly established, it follows, so plausibly as to be almost certain, that any of the states A, B, C, and D, and many intermediate modifications of them, may spontaneously occur in one brain, leaving the other entirely unaffected. We see an example of this in hemiplegia, or paralysis on one side only.

"2. One brain may be subjected to one of these changes, and the other brain may have its powers and functions changed or modified in a different manner.

"3. One brain may be reduced to the state of childhood (state A,) and the other remain in its ordinary state.

"4. One brain may be in the state A or B, and the other may have its functions suspended or modified by a greater or less degree of torpor, as in sleep, catalepsy, extasis, &c.

"5. One brain may be in the state of childhood, and the other torpid and unconscious." (p. 396.)

There is certainly much in this mode of explaining the phenomena of Double or Alternate Consciousness, that, if we admit the possibility of con-

necting *mental* and *physical* conditions to this extent, seems highly probable. And it is certainly an argument in favour of the view in question, that we never hear more than *two* such conditions as presented by the same individual. It will be observed that in cases of complete alternate consciousness, what we stated at the outset as the only notion of the duality of the mind—the existence of two *egos* or consciousnesses in the same body—is to a certain extent fulfilled. We say to a certain extent, however, because these two states are *never coexistent*; and until two *egos* could be shown to be in action at the same time, we can see no cause (perhaps it would not even *then* exist) for unhesitatingly allocating them in the two sides of the cerebrum. We know too little of the connexion between mind and body, or of the effects produced upon the latter by disease, to be able to assign the real causes of *any* mental disturbance produced by disease or accident. For example, a man falls upon his head—on one side it may be,—and henceforth loses the memory of a particular language. Now it is not at all easy to understand how the corresponding part of *each* hemisphere should be affected in the same manner, by a blow on *one*. If there be any localization of such a memory at all, such *must* be supposed to occur; unless we imagine that the effect is exerted upon that *central* organ which we believe to be the peculiar residence of the mental essence—if such essence exist,—or in other words, the peculiar seat or centre of mental phenomena.

Our object has been, throughout, to prove that Dr. Wigan has not made out his case; not to demonstrate that he is wrong. We regard the question as furnishing a very good *peg* on which to hang observations; and in that form it was put forward by Dr. Holland, in his 'Essay on the Brain as a Double Organ.' We have not said a word respecting the question of Dr. Wigan's originality; because he over and over again affirms this to be a point on which he is perfectly careless. But we think it right to state that the question does not seem to be advanced one step by Dr. Wigan's publication. His dogmatism on questions, as to which no certainty *can* be attained, goes for positively nothing; and we should ourselves rather follow Dr. Holland as our guide in the inquiry. It is but just to Dr. Wigan to state, that he fully recognizes the value of Dr. Holland's suggestions, as far as they go: and dedicates his volume to him as a tribute of respect to "a profound thinker and able physician, a scholar, a philosopher, and a gentleman." He also mentions Mr. Barlow's little treatise "On Man's Power over himself to prevent or control Insanity," (noticed by us vol. XVII, p. 245,) as having been the immediate cause of the development of his long-cherished views in their present form. In fact he seems to have been restrained by the fear of being charged with materialism, atheism, &c., &c.; and to have been encouraged by the clerical example to make known his speculations. We hope that the time is going by, when this cry will be raised against *any* fearless enunciation of what he believes truth. The inductions of science are not to be tested by their conformity with our preconceived notions, as to the nature of the divine government, or the connexions of matter and spirit; but by the degree in which they are supported by those *facts*, which are a revelation of the Deity's mind and will, no less than his written Word. It is by these, and these alone, that we have tried Dr. Wigan.

## ART. II.

*Traité de Pathologie cérébrale, ou des Maladies du Cerveau; nouvelles Recherches sur sa Structure, ses Fonctions, ses Altérations, et sur leur Traitement thérapeutique, moral et hygiénique.* Par SCIPION PINEL, M.D. ancien médecin des aliénés de la Salpêtrière et de Bicêtre, &c.—Paris, 1844.

*Treatise on Cerebral Pathology; containing original Researches on the Structure, Functions, and Morbid Changes of the Brain, and the therapeutical, moral, and hygienic Treatment of its Diseases.* By SCIPION PINEL, M.D., formerly Physician to the Lunatic Department of the Salpêtrière and Bicêtre Hospitals, &c. &c.—Paris, 1844. 8vo, pp. 564.

THE treatise before us is elementary and practical; it is principally intended, as its author states, for the use of students and practitioners desirous of possessing a complete, though concise, history of the structure, functions, and diseases of the brain. It will be seen however, as we proceed in our analysis of the volume, that the author has not limited himself to a mere condensed account of the prevalent doctrines bearing upon his subject, but that in several important instances he has contributed the results of original investigations tending to throw considerable light upon certain obscure portions of cerebral pathology.

We have in various articles in this Journal made our readers so fully acquainted with the opinions of the authors upon whose works M. Pinel mainly founds his description of the anatomy and physiology of the brain, that we shall pass over the sections of his work devoted to these subjects. We are the more ready to adopt this course, as in point of fact the acquaintance of M. Pinel with the existing micrology of the organ is any thing but perfect; and we shall besides by such omission be enabled to devote greater space to the more attractive divisions of his volume.

Turning then at once to the pathology of the brain, we find M. Pinel commencing with disorders of intellect. These disorders he divides into states of exaltation; of depression; of total abolition. Under the first head he comprises—acute delirium, mania or maniacal furor, monomania bearing upon ideas, as distinguished from monomania bearing upon desires; and, lastly, cerebral hallucinations, in contradistinction to illusions of the senses. To the second head, that of depressed or lowered activity, we find referred—chronic delirium, melancholia (hypomania), stupor or cerebral œdema, common dementia. To the third class belong imbecility and idiocy. We shall not make any attempt at a complete sketch of the author's account of these different morbid states, but simply dwell upon such points under each head as particularly attract our attention.

*Acute delirium.* The clinical lectures of Dupuytren contain, as is well known, among others of their graphic delineations, a picture of the acute delirium which, in certain cases, supervenes soon after the receipt of some serious injury, as a fracture, dislocation, &c.; or, it may be, after the individual has simply undergone some trifling operation. This species of delirium, which the celebrated surgeon described under the title of nervous, under the presumption that it arose independently of actual morbid change in the cerebral substance, M. Pinel on the contrary regards as constituting

the most characteristic symptom of the outset of acute inflammation of the periphery of the brain,—in a word of acute encephalitis, and of encephalitis so rapid in its course that it proves fatal, before it has run through its ordinary phases. But inasmuch as these phases are not anatomically exhibited, the chain of evidence that encephalitis is always actually present in such cases must, we contend, be regarded as defective.

M. Pinel has remarked, as others have done before him, that acute diseases of the lungs are less prone to give rise to sympathetic delirium than those of other organs; but he attempts no explanation of the fact.

Contrasting the effects of opium and belladonna on the brain, the author states that whereas (in these countries at least) the former acts rather by stupefying the individual than by exciting a particular flow of ideas, the latter invariably gives rise to the most curious illusions of sense, and a sort of forced gaiety. This special character in the delirium following excessive doses of belladonna is considered to be explained by the action of the drug on the optic thalami.

When the irritation productive of acute delirium is “direct, make free use,” says M. Pinel, “of derivatives of all kinds, and of certain sedatives, but in spite of appearances, be chary of bleeding from the arm; venesection in the majority of cases converts acute delirium into chronic mania.”

*Acute mania or maniacal furor.* M. Pinel holds that an attentive observer will always succeed in discovering in certain premonitory symptoms the proof of a “period of incubation,” rarely occurring in cases of ordinary mental alienation. An illustration will explain the writer’s notion. A poor clerk in a shop, generally of melancholy disposition, saw some omnibuses belonging to a newly-started company passing in the street, and was immediately seized with the idea of establishing a similar concern himself. From that moment sleep deserted him; his nights were spent in revolving plans in his head; his days in laying these before all the moneyed individuals of Paris. When the success of his schemes was made matter of question, his rage was unbounded. In the course of a few days a fit of the most violent mania prostrated the poor speculator. Now cases such as this might be cited in hundreds; we ourselves have known two within the circle of our own acquaintance during the last few years. No doubt then can be entertained of the accuracy of the description; but we doubt whether such intellectual demonstrations as those described can be regarded as evidence of the existence of the *period of incubation* of insanity, understanding this phrase in the ordinary sense. And for this reason: the period of incubation of any disease being once set in, the supervention of the disease itself in mild or severe form is a necessary sequence. Now it is certain that such speculative vagaries, as have been referred to, seize upon thousands of individuals who never exhibit distinct symptoms of mental alienation. The state of mind in question we regard as one which may or may not, by the excited state of cerebral circulation it maintains, produce actual mania; in fact as an exciting cause and not a part of this affection. But this view of the condition of things would not lead us to watch an *iota* less carefully, than M. Pinel recommends, persons exhibiting the phenomena of this “period of incubation.”

On the other hand we do not mean to question the reality of a period of



incubation in certain other cases, where clear and obvious exciting causes are deficient. When individuals exhibit repugnance for their ordinary occupations, avoid acquaintances for whose society they had previously displayed particular fondness, pass their time in ruminations unconnected with existing circumstances and for which no motive, intelligible to other persons, can be assigned; and when, joined with their perverted state of intellect, cephalalgia, congestion of the brain, feverishness, disturbance of digestion, depraved appetite, loss of flesh and other functional disorders are observed, a state exists which may be fairly considered to announce incubation of mania. These phenomena may exist for months, for upwards of a year, before the actual outbreak of maniacal furor.

The author describes the phenomena of invasion, of the period of excitement, the convalescence and recovery from mania, with graphic conciseness. He observes that although the doctrine of crises, as taught by the older observers, cannot at the present day be admitted, yet that the occurrence of critical phenomena, especially in connexion with maniacal paroxysms, cannot be questioned. He affirms also, as a matter of constant observation, that patients whose recovery has been marked by critical evacuations from the kidneys, skin, intestines, &c., are much less liable than others to relapse.

The termination of mania is sometimes of a most disastrous kind. Maniacal patients not very unfrequently die *suddenly*, after exhibiting a state of furious agitation for a period varying from two or three days to three weeks. According to M. S. Pinel these patients are the victims "not, as is even still said, of nervous apoplexy, but of the extreme degree of development of violent cerebral congestion, of per-acute encephalitis, suddenly arrested during its period of greatest intensity." In another class of cases, the termination of the malady, though equally fatal, is less abrupt. The maniac after months, or it may be years, of violent excitement becomes suddenly quiet and silent; a few days after this change, decomposition of the features takes place, the skin becomes dull and yellow coloured, the eyes lustreless and fixed; the whole system appears deeply affected. Death follows in a few days, preceded by stupor and paralysis. In such instances the state of congestion is found to have passed on to actual softening, or even purulent infiltration.

The connexion sought to be established thus between mania and encephalitis is obviously of importance; nine cases are related in its illustration. In the first of these an old woman, after exhibiting a state of furor for six months, became suddenly quiet and died in two days. General vascularity of the hemispheres, especially of the gray substance, which M. Pinel presumes to have existed without intermission for six months, appeared to explain the maniacal furor; partial encephalitis (red softening) to account for the sudden cessation of life. The "cerebral phlogosis suddenly passed here into the inflammatory state, just as pulmonary catarrh may become in the course of a few hours a true pneumonia." Now the evidence that in cases like the present the congestion discovered in the brain has existed unchanged for months, or years, is to our minds quite unsatisfactory. The illustration given of the conversion of congestion into inflammation is peculiarly unhappy; we have never seen, and do not believe in, the passage of catarrh into pneumonia.

In others of the cases reported by M. Pinel, various chronic lesions of the membranes exhibited themselves, and are presumed to have been the cause of persistent furor, a proposition which it would perhaps be difficult to contest,—although a fact forgotten by M. S. Pinel in the ardour of his descriptions, namely, that all the chronic morbid changes observed by him are met with in persons who have never been maniacal, is not very easily reconciled with his doctrine.

Viewing the matter in its connexion with pure morbid anatomy, and perhaps even with pathology, hypertrophy and eburnation of the cranial bones, is a condition of no mean interest. M. S. Pinel, commenting on one of the cases referred to in which this condition existed, considers it explained by congestion of the brain frequently recurring, causing consecutive disease of the pia mater and arachnoid, and eventually of the dura mater; the latter membrane having contracted adhesions with the skull is further supposed to have produced an “afflux of abnormal nutrition” to the bones, and so augmented their density and bulk. Facile enough is the explanation; but what of the cases (and they are neither few nor far between) in which eburniform hypertrophy of the skull exists perfectly independently of thickening or unusual adhesions of the dura mater, and, vice versâ, of those where the alterations of the meninges reach their extreme degree unattended with modified nutrition of the bones?

The afflux of blood required to produce “irritation capable of causing permanent delirium” eventually produces “a special decomposition” of the gray substance; this “decomposition” is signified by the apparent division of the substance in question into three layers: “1. The first or internal of three layers, that contiguous to the white substance, retains its grayish hue in very much the natural state. 2. The second layer, of greater thickness, and of bright or violet red colour, appears to be formed solely of vessels loaded with blood: in this stratum I place the seat of all maniacal symptoms, and of all states of morbid excitement of the intellectual faculties, when it presents a very bright red colour, and is increased in consistence. The degree of consistence, however, varies a little, with the greater or less advancement, and the more or less acute course of the disease; at an early period it is greater, towards the close less marked. 3. The third layer, much thinner, is pale and whitish; this is the albuminous exudation, which we found so distinctly marked in some cases, but which is in all distinguishable from the middle stratum by its grayish appearance.” We have transcribed this account, though but little disposed to place unlimited confidence in its accuracy; we have examined some subjects cut off by encephalitis, and have not noticed this species of stratification, though not unaware that statements of its existence had been put forward.

*Acute monomania.* Acute monomania, no matter what be the nature of the idea on which it turns, is clearly connected with ordinary mania in consequence of the state of continual agitation of the sufferer, his outcries, and paroxysms of rage and fury. The violence of his fury is rendered greater from his being perfectly convinced of the reality of his chimeras, and from possessing the faculty of reasoning perfectly on the subject. Monomaniacs are among the most dangerous and intractable inmates of an establishment, says M. Pinel, and even their occasional fits of tranquillity are always to be looked upon with suspicion.

The suicide of the *suicidal monomaniac* is distinguished from that committed under the ordinary instigations to the deed by its being invariably perpetrated in a particular way. The monomaniac determines upon some system or mode of destroying himself, and nothing will divert him from its adoption; "the true suicide on the contrary avails himself," says M. Pinel, "of any expedient which chance may supply." This latter statement does not appear to be perfectly correct if received literally, though, no doubt, the distinction sought to be established by M. Pinel is in the main real. It does not appear to be correct, because we know it was shown numerically in the remarkable work of M. Guerry (*Sur la Statistique morale de la France*), that the mode of destruction adopted by suicides varied with their sex, age, social position, &c., was consequently to a certain extent regulated by these, and could not be regarded as altogether a matter of chance. It may be urged, no doubt, that the conditions of age, sex, &c., referred to will place individuals in positions more likely to supply this or that ready means of self-destruction, and there would be some validity in the objection, but not sufficient to warrant the exclusiveness of M. Pinel's proposition.

The terms *hallucination* and *illusion* have been used by some writers as synonymous, by others in different senses. By hallucinations the author understands "certain sensations which perceived by the lunatic, appear to be excited in his brain through simple excitement of the organ, and without the actual presence of the objects which these sensations represent. Dreams are an example of hallucinations furnished in the healthy order of things. The term illusion is reserved by M. Pinel for diseased states of the senses and of sensibility. In hallucinations the brain is the only part actively engaged; in illusions on the contrary, impressions made on the organs of sense reach the brain in a perverted condition. Numerous remarkable examples, presenting however nothing new, are related of hallucinations of various kinds, and cases added exhibiting the transition from the state of hallucination to that of chronic mania. Indeed mental alienation might, in certain points of view, be looked upon as a series of hallucinations, deriving from these its most characteristic signs. In hypochondria cerebral hallucinations and illusions of sense coexist. By the way we may mention that M. Pinel defining hypochondria with many other writers as a perversion of the instinct of self-preservation and of love of life, takes umbrage at the term (which it must be confessed is sufficiently absurd,) and proposes the word *biophobia* should be adopted in its room. But biophobia can only be interpreted fear of life (like hydrophobia, photophobia, &c.,) and not, as M. Pinel's notion would require, fear for or concerning life; the word employed should signify fear of death.

The description of *ecstasy* is good, but requires no analysis, as it is almost verbatim derived from Andral and Calmeil.

In enumerating the causes of *chronic delirium*, M. Pinel alludes to the supposed influence of the moon in inducing paroxysms. "Daily experience at the Salpêtrière and at Bicêtre exhibits, in a collection of upwards of 3000 patients, the absolute nullity of the alleged influence of the moon. It may however be said that, during certain nights, lunatics may be more than usually agitated in consequence of the unusual light entering their rooms, and the figures produced on the walls and windows." This seems

a plausible way of accounting for the marvels recorded concerning the influence of the moon on the insane.

Among the weakened conditions of the intellectual faculties, one of the most curious and interesting is that state of intellectual and moral annihilation, described by Esquirol under the title of *acute dementia*. This state differs from ordinary dementia in that it almost always affects young persons, and terminates rather rapidly in recovery. Georget described marked cases of it; and M. Etoc Demazy was the first to connect the symptomatic phenomena with serous infiltration of the cerebral substance—œdema of the brain. M. S. Pinel presented a special memoir on the subject to the Academy of Medicine in 1840, and submits the substance of this to the readers of his present work. As this affection is less known in its anatomical relations than it should be, we shall give a pretty full analysis of the author's descriptions.

The dura mater and arachnoid are generally natural in appearance but raised up by subjacent serosity. The pia mater is thickened, of pale pinkish hue, exhibits a varicose appearance, or sometimes seems studded with granulations or albuminous concretions; it is infiltrated with serosity of darker colour, and less viscosity than natural. The upper and lateral convolutions of the brain are flattened and pressed against each other; the appearance of the anfractuositities is almost lost; the gray substance loses its natural colour, becomes tumid and spongy, yet rarely loses its consistence; the proper structure of the part is infiltrated with serous fluid, and the vessels even contain this in abundance instead of blood; the white substance is similarly infiltrated, but to a less extent; its vessels likewise contain serous fluid, as those of the gray matter. The seat of this œdema is remarkable; in eight out of nine cases it was limited to the superior regions of the brain, either lateral, anterior, or posterior; in the ninth, the cavities, both internal and external, of the encephalic system were filled with fluid. In no instance did the liquid exhibit itself at the base of the organ. This affection of the brain generally coexists, or is complicated, with œdema of other parts of the body.

M. S. Pinel inquires whether the serous exhalation is produced through obliterations of the veins, which have in consequence lost their faculty of absorbing, or whether the irritation of the brain which produced delirium at one time has become transferred into a "secretive irritation which produces abolition of intellect." In replying, the author observes, first, that there is a particular tendency in these patients to œdema of various parts of the body. Now, in individuals possessed of this tendency, "it is conceivable," he continues, "the brain being in a state of irritation already, and its faculties excited above par, that this cerebral affection shall act in its turn upon the pia mater, increase the activity of its exhaling function, and eventually spread to it the state of morbid excitement affecting its own substance. The pia mater then becomes red and thickened; its vessels undergo dilatation; it secretes a greater quantity of serosity than natural, and absorption ceasing to hold the healthy relation to secretion, an unusual accumulation of serosity follows between the membranes and brain, just as occurs in the serous cavities. A new species of compression then acts on the brain, which changes the maniacal state to one of apparent calm, and which, making rapid progress, eventually blunts completely the faculties of intellect, locomotion, and sensibility."

Be this, or be it not, the real connexion of the anatomical changes, the symptoms of the affection are clearly defined. Those depending on alterations of sensibility require separate consideration, when this disease commences, and when it is confirmed; but the difference is one of degree and not of nature. At first various portions of the skin become more or less insensible; the fingers and other parts may also become the seats of various modified states of sensibility; the patient may feel a sensation of cold, &c., in these regions. In the most advanced stage the insensibility is such that the skin may be burned, or a seton applied, &c., without the least consciousness being exhibited on the part of the patient; the mucous surfaces are likewise perfectly insensible. The external senses only, says the author, are implicated; thus the conjunctiva is perfectly insensible, but vision excellent.

In respect of movement, the characteristic phenomenon of cedema of the brain is a state of numbness and unwillingness to move—a sort of *station fixe* of the limbs. This differs from paralysis completely; the patient can move, but it requires a violent effort of the will to produce movement. The author thinks the condition connected with cataleptic rigidity, and considers it worth serious inquiry whether the latter extraordinary condition be not the result of compression of the brain, generally or partially, by serous effusion.

The most violent delirium and maniacal agitation are suddenly exchanged in these cases for a state of perfect tranquillity and apparent rationality; the patient suffers the strangest hallucinations. Memory and the faculty of attention first become disturbed; the ideas confused and vague; speech slow, laborious, and impossible. At a more advanced period the intelligence is totally annihilated. But there is a very remarkable feature in the mental phenomena of the disease; the patients retain consciousness of their condition, for, on recovery, (which frequently takes place,) they affirm that they were perfectly aware of their position, but felt neither the strength nor the will, nor even the desire, to cause its cessation.

Cerebral cedema signifies its approach by cephalalgia and a feeling of constriction round the head; the organic functions suffer too; hunger, thirst cease to be felt comparatively; the excretions are obstructed; the pulsations of the heart fall to forty, or even thirty in a minute.

The author considers it readily conceivable that an affection which is “like an asphyxia of the intellect, although extremely serious, should nevertheless rarely prove fatal.” Whether very readily intelligible or not, the fact is as stated. Out of one hundred and twenty-five insane subjects M. Etoc Demazy speaks of only five very obvious fatal cases; an experience of nine years furnished the author with but five others. Nevertheless acute dementia is sufficiently common; but it almost always terminates by recovery, after an ordinary duration of a few months.

*Simple common dementia*, that state of general weakening of the moral and intellectual faculties which constitutes the closing phasis of all cases of incurable delirium, M. S. Pinel attempts also to connect with a special condition of the cerebral substance. This is a peculiar kind of induration; the vessels disappear, the medullary substance acquires a dull whiteness, becomes hard, resisting, and fibrous. This induration is also,

according to the author, frequently observed in epileptic subjects. He is, however, far from regarding it (daily experience might be cited to prove his error, if he did,) as the sole anatomical alteration of the brain met with in persons dying in a state of dementia; he simply maintains that the condition in question exists sometimes and had been but little observed.

The author passes to the subject of *idiocy* and *imbecility*. He admits three "perfectly distinct varieties" of idiocy—*amentia* (*abrutissement*); *stupidity* (*stupidité*), and *silliness* (*bêtise*); these varieties appear to us nothing more than degrees of a state fundamentally the same; one of the cases given shows indeed the transition of one into the other. Idiocy is congenital; imbecility acquired.

In *amentia* the total existence of the patient seems limited to digestion and respiration. Neither hunger nor thirst are felt, the individual remains in the spot and position in which accident has placed him. In *stupidity* the idiot has some consciousness of his wants; he cries out when hungry, and will move to look after his food. Some of those belonging to this category are in a state of ceaseless motion, motion without an object; they pass days or years in balancing the body backwards and forwards: they sit huddled up together in a corner, and as M. Pinel observes, seem to have a sort of attraction for each other; an attraction of which their passion for masturbation is the cause. In a less marked degree of idiocy, silliness (*bêtise*), the individual is susceptible of the influence of education to a certain extent, he gives evidence of some slight intellect, and exhibits propensities; he understands questions having reference to his own wants; he moves with an object and according to directions given, and is consequently capable of being made useful in household concerns, &c.

Now these conditions can only be regarded as degrees of each other, as is shown by the following case, which possesses interest of no ordinary kind in several points of view. A girl, hydrocephalic from birth, was brought to the Salpêtrière at the age of 16, in a state of complete *amentia*, incapable of action or comprehension in any single way; her limbs were not larger than those of a child of six years old. But after some months of care on the part of a nurse who had conceived an affectionate sympathy for the poor being, she had made such progress as to be able to knit, and to articulate a few words and phrases. In the course of a year, she was able to hold a sort of imperfect conversation in ill-articulated words, upon numerous subjects connected with herself; here, however, the improvement appears to have become suspended. The poets have made much of the influence of love, whether sexual or of a purer kind, in developing the intellectual faculties; here is a case in point. The picture is a more pleasing one, but not more true to nature in its way, than the "*comment l'esprit vient aux filles*" of Lafontaine.

The fifth chapter introduces us to "*lesions or perversions of instincts.*" The first instinct considered is that of self-preservation, the first perversion of this, *hypochondria*. The original mode of regarding this malady, in respect of its organic cause, was as an affection primarily of the abdominal viscera, secondarily of the brain. Georget and others, on the contrary, started the idea that the brain was really the organ first affected, and the

author gives in his adhesion to the same notion, while he attempts even a greater closeness of localization than those persons. According to M. S. Pinel, "the central parts of the brain are earliest attacked, become the seat of a slight change, which gives evidence of its existence by the first symptoms of hypochondria, such as disgust of life, and imaginary apprehensions regarding everything which concerns health. Subsequently the affection becomes more fully developed, extends wholly or in part to the ganglionic system, &c. . . . Hypochondria is hence in my opinion a neurosis, cerebral at first, eventually trisplanchnic. It must consist in an irritative alteration, of slight amount at first, but which may acquire a great degree of intensity, especially during paroxysms and violent fits of the disease." This may or may not be correct doctrine, but the author advances nothing in the form of demonstration, and in the next page appears, in speaking of hypochondria which follows excessive sexual indulgence, to place the genital organs in the position which the generality of writers accord to the digestive, in other words that which he maintains is always occupied by the brain.

Suicide, considered as the result of perversion of the *instinct*, and wholly distinct from intellectual defect, is spoken of as acute and chronic. The acute suicidal mania is that following the course of an acute disease, a state which may be likened to a febrile impulse, which lasts from one to three weeks, and ends favorably if the individual find it impossible, in consequence of close supervision, to execute his design. The various motives leading to the more ordinary species of chronic suicide, that in which the individual nurtures and matures his plans for months and years with deliberate obstinacy, until chance or the occurrence of long awaited circumstances enables him to perpetrate his design, are examined with philosophic spirit, and there is so much valuable truth, as it appears to us, in the following observations, that we cannot regard their transcription as a trouble.

"The mania of self-destruction is at the present day propagated with such facility through all classes of society, that its existence appears to form an element in the manners of the times and to claim recognition as a consequence of modern civilization. It has ceased to excite alarm, it scarcely even surprises. The news of death, by his own hand, of a friend or relation, is received as a subject for curiosity rather than affliction, and the act itself is forgotten in the anxiety to inquire after the details of its accomplishment. Here is a serious evidence of the blunted state of feeling, which arises from habit. But it must be confessed this indifference is traceable to a more deeply-seated and more comprehensive cause, none other than the moral apathy of the age, an age without faith in itself, in art, in literature, destitute of elevating creed of any kind; indifference to day, to be followed to-morrow by decline and corruption! Have we actually reached that point of weariness, which seemed to seize on old Rome, when there was nothing left for her to conquer?

"In an age of such moral constitution as this, need one feel surprise that individuals destroy themselves, much as they live, without having too clear a notion of the why or the wherefore? Can one marvel that suicide, heralded, published, as it is, in the daily prints, shall in the end consider itself something of importance, and stalk forth unabashed, as assassination has done too, in all its hideousness, before an age that receives it with very peals of applause? The legislators of old days were wiser than our own; they knew how to punish, or at least to stigmatise,

suicide, self-murder, as well as the murder of one's neighbour. In Athens it was decreed that the head of the suicide should be burned separately; Tarquin the elder refused such criminals burial; in the times of St. Louis their bodies were dragged on a hurdle through the streets; at the present day, Roman Catholic priests refuse the suicide burial, but party-spirit deprives the lesson of the instruction it would otherwise convey. For my own part I believe the time has come for thinking seriously of stigmatising self-destruction as a vile and senseless act. If nothing better can be done, let us imitate the king of Saxony, and consign the bodies of suicides to the anatomical theatres. This simple measure would have the effect of arresting almost all women and many men in their suicidal design. Let the legislature also prohibit publicity being given to acts of suicide and homicide."

It is no doubt true that these observations are more strictly applicable to the state of feeling existing in France, than in our own country, on the subject of suicide; but there is much which has reference to ourselves. If it be certain that in these islands there is less propensity than in France to the commission of the deed for the mere purpose of acquiring a few hours' posthumous notoriety; and if disappointed young ladies and gentlemen less frequently among us bolt the door, kindle their *boissecrau* of charcoal, and die lovingly in reciprocal embrace, it is as unquestionable on the other hand that example exercises a most pernicious influence in England, and that the crime is constantly committed without even the semblance of an intelligible motive. Epidemic suicide is even more common here than on the other side of the channel. As long as the pernicious system prevails among our jurymen, of shielding suicides from obloquy by their eternal and painfully absurd verdict of "temporary insanity," amelioration is neither to be expected nor imagined.

*Homicidal mania* presents two distinct forms. In one series of cases the murder is determined upon in consequence of false reasoning, or some senseless motive; in the other (and these cases are the more numerous), the intellect appears sound, the patient being led by a blind instinct, some indefinable feeling which drives him to the deed. Of both these varieties, striking illustrations are furnished either from the author's own experience or that of others. We shall content ourselves with noticing one example of the first species. An individual became suddenly impressed with the importance of purifying the human race by baptism of blood; he began in consequence by killing his children, and would have sacrificed his wife in the same manner, had she not escaped in time. Sixteen years later this same person, then confined at Bicêtre, succeeded in destroying two fellow-patients, a striking example of the pertinacity of an idea; his object was the same as before. Circumstances of recent occurrence in our own country, give all opinions bearing on the subject of such homicide peculiar interest, and we refer to the present chapter as to a source of sound instruction. The monstrous deeds which have been committed from time to time under the influence of this perversion either of intellect or of the affective faculties, and which have nevertheless been allowed to pass unpunished, excite a natural apprehension that real criminals may escape in company with those who cannot be esteemed accountable for their actions. The difficulty is increased by the fact that in certain cases of maniacal homicide, as of actual crime, there is premeditation and struggle with conscience, "there is consequently consciousness of murder." But this



is too serious a question to be examined cursorily, and our want of space prevents us from entering upon a full inquiry into it.

But another class of persons, those who have been actually insane on other subjects for a greater or less period, are liable to be seized with the mania of homicide and destruction. In the insane, however, this "instinct of ferocity" is only an accidental complication implicating the affective faculties; whereas in those whom we have previously considered, it constitutes in itself the total malady. It is especially curious, and the remark has been made by numerous observers, that it is more common to find men who before their insanity had been distinguished for gentleness of temper and suavity of manners, exhibit, when insane, these destructive tendencies, than individuals otherwise characterized. The former class of persons, after recovery, dread their own character under certain circumstances, and fear at each moment that their determinations and acts may be somewhat influenced by the bias which exhibited itself so strongly during their attacks of madness: Esquirol relates the cases of two magistrates who having recovered from paroxysms of the kind, took a final resolution of never presiding in a criminal case, guided in this determination by the apprehension referred to.

The mania for destroying dwelling-houses, &c., by fire, is with as much difficulty explicable, as those varieties of perversion we have hitherto considered. The monomania is more frequent in some countries than in others, for example in Germany than in France. The late medical legist Marc supposed the fact (and more especially the greater frequency of perpetration of the deed by very young girls,) to be accounted for by the mode of life in Germany, and the circumstances attending the establishment of puberty, which there render nervous affections of a more extraordinary character and deeper die than elsewhere. Little importance can be attached to this hypothesis.

M. Pinel conceives that the title "*mania of temper*," (reasoning mania of others,) may be applied "to that slight perversion of the instincts and affections, which makes an individual the scourge of all those with whom he is brought in contact, without his being, nevertheless, insane." He means those turbulent, indocile, reckless, ungovernable beings, constantly committing reprehensible acts, which they are always ready to justify by reasons, individuals who are a source of continual disquietude and anxiety to their relatives and friends. They know perfectly well what they do and say; the intellect is unaffected even, they defend themselves with clearness and force; in a word they labour under a perversion of instincts, under a generally increased intensity of bad propensities, but only to a degree which rarely amounts to actual insanity. This condition is one which requires to be studied and observed with the more care, that those affected with it are excessively cunning, and most ingenious in concealing their real state from persons appointed to inquire into their fitness for the management of their affairs.

A new chapter introduces us to the subject of "*lesions of voluntary or cerebral motion*;" they are considered under the heads of exaltation, depression, and intermittence.

Concerning the violent and powerful muscular action in maniacal and certain epileptic patients nothing new is said. Tetanus is said to be "the

result of a still more marked" [than in mania and epilepsy, the influence is] "inflammation of the motor nervous centres. *Subsultus tendinum*, stiffness of the limbs or of certain muscles, convulsive motions giving a sort of quivering movement to these organs, are all symptoms which only occur towards the middle or close of cases of the most intense encephalitis; they are always bad signs, because they indicate most violent congestion of the brain, always followed by prompt disorganization and per-acute softening." In proof of all this we are simply told that upwards of fifty cases are to be found in the works of Rostan, Bouilland and Andral, confirmative of its truth. Now there is no excuse for an author who makes such broad statements as these, and furnishes no precise evidence on this head: who will believe that the doctrine taught concerning the anatomical characters of tetanus is anything but a matter of closet speculation? Not those certainly who have either seen or read accounts of the post-mortem examination of individuals cut off during the existence of that morbid state. Every one of the symptoms M. Pinel enumerates as significant of extreme cerebral congestion, always followed by prompt disorganization, and per-acute softening, are witnessed in persons cut off by the French form of typhoid fever, (that which exists under his very eyes,) whose brain presents very trifling aberration only from the state of health.

For a greater or less period before their death, a certain proportion of insane individuals are afflicted with *general paralysis*. This affection was first made the subject of special study by M. Calmeil, and certain other French writers are quoted by M. Pinel as having investigated it at later periods. He makes no mention of Dr. Carswell, (which was of course to be expected, as he was not a countryman of the author's,) who has given a graphic delineation of the atrophy of the convolutions and accumulation of serosity in the meshes of the pia mater, which is certainly the anatomical condition discoverable in a certain number of these cases. It would appear, however, that such is not always the morbid change present, for the author, after a special experience in the matter (on the duration and closeness of which he dwells with complacency,) comes to the conclusion that under one vague generic title, several very different pathological states have been confounded,—states having each of them their characteristic course, symptoms, and morbid changes. These states are referrible to six perfectly distinct forms, according to M. S. Pinel's judgment; and as the subject is comparatively a new one, we shall give an outline of his statements concerning each.

The first form has not been hitherto described. It is that in which the general paralysis presents itself with all the symptoms of a most violent inflammation, running a rapid course of a few days or weeks, terminating fatally, and leaving obvious traces of inflammation in the centre or on the surface of the encephalon.

The second form is the first in a chronic state. The invasion is slow, sometimes imperceptible; the duration often more than six months or a year. The disease slowly disorganizes the cortical substance, especially its middle strata; traces of its presence are also very frequently found in the corpora striata, and the white substance surrounding the lateral ventricles.

The third form is marked by acute symptoms, which apparently acknow-

ledge inflammation as their cause, and are yet the result of an "hypertrophy, an acute turgescence of the white substance of each hemisphere." The peripheric or cortical substance is perfectly healthy, but the convolutions are flattened against the skull. The anatomical characters of this hypertrophy, (especially as occurring in children, and under circumstances which render it liable to be confounded with hydrocephalus,) are well known; the new feature in its relations disclosed by M. S. Pinel, (in addition to its connexion with "paralysis of the insane,") is that of its coexistence with, and indeed production of a febrile state.

The fourth form is that of atrophy of the convolutions with effusion of serum, much more rarely of blood, within the meninges.

In the fifth form the paralysis affects an intermittent course. It recurs at intervals of six months or a year, disappearing completely, to return at fixed periods.

The sixth form appears to be founded rather on the curability of the disease, than on its peculiar anatomical or symptomatic characters. Recovery takes place in certain cases, it may be under the influence of treatment, or, as is infinitely more probable, from the peculiar character of the patient's constitution. The author has known patients, reduced to the last stage of marasmus, having lost the soft parts about the sacrum extensively by sloughing, and being at the point of death, nevertheless recover and even resume their station in society. Such fortunate events are, however, singularly rare.

Whatever be the nature of the cerebral alteration, the first symptoms noticed are difficulty of speech and deglutition, accompanied by disturbance of ideas. Such symptoms occurring in the insane, announce with greater certainty the outset of "paralytic encephalitis;" they will justify the physician in prognosticating a fatal event in individuals appearing at the moment possessed of full bodily health and vigour. At least so says M. Pinel in the paragraph now before us, but it is to be remembered that according to his own experience, recovery is not an actual impossibility. Shortly after the supervention of the above symptoms, weakness of the lower extremities sets in, with occasional spasmodic movements. Such may be considered the first stage of the disease.

In the second degree the symptoms become more marked; the upper extremities are seized with paralysis. The patients are unable to raise their arms; in some instances they clench convulsively whatever they hold in their hands. The sensibility of the body generally grows obtuse; the motions become involuntary and the paralysis extends to the muscles of the entire digestive system.

Incipient emaciation and the establishment of sloughing announce the third degree. The sensibility and intellectual faculties of the patient sink into a state of complete annihilation. Persistent contraction of the limbs, with partial convulsions, sets in. Various complications in the thoracic or abdominal viscera ensue, and the patients perish in the most complete state of marasmus, unless as sometimes happens they are cut off by sudden congestion during the second period of the disease.

The proper treatment of this terrible malady seems to be yet an enigma. M. S. Pinel, after having made trial of every mode of medication which reason points to, is obliged to confess his almost constant failure. He was

not long in observing, however, that private patients occupying their own houses, surrounded with persons to administer to their wants, and, above all, to keep them in a state of cleanliness, had a better chance of recovery than the inmates of the wards at Bicêtre destined for the reception of the poor in such condition. Hygienic treatment, the circulation of pure air round the sufferer, &c., are consequently matters of primary consequence in the management of the affection.

The two chief therapeutical indications are to disgorge the brain of its excess of blood, and to support the strength. The first indication has been best fulfilled, according to M. Pinel's experience, by the daily abstraction of blood from the nucha by cupping, and this kept up for months together. But the quantity of blood he recommends to be taken is small certainly, otherwise this constant draining system would be unintelligible,—it is no more than half a table-spoonful. At the same time the patient's strength should be supported by tonic and substantial regimen. Certain it is that venesection, abstinence from food, and the antiphlogistic treatment, generally accelerates the progress and increases the severity of the disease,—a result of which reason would even *a priori* point out the likelihood.

Three causes of paralytic encephalitis have been ascertained by M. Pinel : these are, excessive indulgence in spirits ; grief and physical misery ; hereditary predisposition. In connexion with this etiology it may be stated that delirium tremens is, in the author's estimation, "nothing more than a first degree of paralytic encephalitis."

The account of *epilepsy* is graphic and concise, but not remarkable for its novelty. The author's experience leads him to doubt altogether the possibility of arresting a fit "by acting on the species of nervous current called the *aura epileptica*:" he has at least never seen anything demonstrating such possibility. As regards the nature and seat of the lesion giving rise to the malady, we find him discoursing as follows : "As in the case of general paralysis, so of epilepsy, the identity of seat, so vainly sought for, can only be explained by supposing the morbid state to implicate certain fasciculi, or fibres of certain of the more irritable portion of the encephalon. Hence that morbid state may be seated in the medulla, in the medulla oblongata, in the pons or cerebellum, or in the brain itself. It may depend upon a state of chronic inflammation, or simple chronic irritation, on atrophy or hypertrophy, on effusion or the presence of a tubercle, and, in a word, upon all lesions, trivial or serious, which are seated in the site of these motor and sensitive fasciculi or fibres."

*Hysteria* is defined to be in the female "an intermittent affection of motility, determined by morbid excitement of the genital system and its nervous plexuses, and characterized by sudden loss of consciousness, by general convulsions, and by the fact that after its cessation the patient is conscious of what occurred during the fit ; the latter circumstance distinguishes hysteria completely from epilepsy."

In commenting upon the ordinary prescription in cases of confirmed hysteria, namely marriage, M. Pinel enters into a discussion concerning the primary seat, the fountain-head of the disease, and sneering at the well known crotchet of Georget (who placed the seat in question in the brain) recognises the genital organs as the *primum mobile* of all the phenomena : this is shown by his definition. Now as we confess ourselves to be of those

who do not regard this question of seat as certainly determined in *all* cases, we shall state some of the arguments used by this author in support of the thesis he adopts. Here is a case. A lady's maid continued to follow an exemplary line of conduct till the age of twenty-six : at that period she began to experience certain nervous indefinable sensations, insomnia, tightness at the throat, suffocating feelings, general numbness, and fits of involuntary laughing and crying. Matters had come to this pass, when her services were required for the exhibition of an enema to a female fellow-servant ; while thus employed she suddenly felt the genital organs inundated with fluid, lost consciousness for an hour, and on recovering found her propensities completely changed. She consulted several medical men, who were unanimous in counselling marriage. This being too slow a process, she applied at once to a male friend, who satisfied her desires ; pregnancy followed. She produced abortion at four months and a half ; horrified at all her criminalities, this victim of hysteria attempted suicide, failed, was brought to the Salpêtrière in a state of melancholia, and succeeded in hanging herself a month afterwards. Another still more convincing case follows,—convincing, we mean, as to the fact that in some cases the uterus is the source of the evil. But is it always so ? Are there not cases in which slight symptoms similar to those of hysteria—hysterical in fact—are unconnected with uterine orgasm ? we think there are. But we believe the question open to debate : prostitutes are not hysterical, and such symptoms as we allude to do not occur in women who have passed the age at which sexual desire commonly ceases.

Hysterical phenomena originate in the nerves and nervous plexuses connected with the genital organs ; such is the author's notion, and it is only by admitting it, he conceives, that the occurrence of symptoms analogous to those of hysteria in the female can be understood in the male. This appears *primâ facie* a model of a *non sequitur*, nor does the legitimacy of the argument appear more obviously from the following case adduced in its illustration. A young man, aged twenty-two, was in the habit of feeling the globus hystericus ascend along the spine, and produce a choking sensation ; he suffered from general nervous symptoms, with swelling of the abdomen, wandering of ideas, without convulsions ; he was constantly on the point of losing consciousness, without ever actually doing so. The genital organs were but slightly developed, and he had never had intercourse with women ; he had no beard. All this is very well ; such cases occur from time to time ; but, in the name of Zeno, what justifies M. Pinel's conclusion ! " I have no doubt that there was here some lesion of the pelvic nerves or ganglia, analogous to that determining hysteria."

However, in justice to the author, as well as on account of the extreme interest attached to the circumstances, we must give an outline of another and infinitely more conclusive case. M. Régis, a captain in the army, of elevated stature, robust constitution, and largely developed abdominal system, was at Brussels in 1809, when he received a ball which passed obliquely from above downwards through the abdomen, entering above the nipple and escaping below the last lumbar vertebra. Shortly after (being made prisoner immediately), he had a very severe attack of intermittent fever ; " which terminated in the sixth month by a singular crisis, a discharge of blood from the urethra of three days' duration. From this period he con-

tinued subject to this species of catamenial discharge every month. If exposed to fatigue, or to privation of food, or harassing attacks of the guerillas, the menstrual discharge became suppressed, and the captain suffered from the symptoms of amenorrhœa, such as colic pains, sensation of weight in the loins, heat and pain in the epigastrium, all of which continued until menstruation returned."

This condition of things grew worse and worse till the month of December, 1812. The symptoms had become complicated with convulsive attacks, recurring every month for two or three days before the discharge of blood. During these attacks the patient lost consciousness, had convulsive movements of the limbs, without stiffness, suffocation, delirium turning upon sabres, cannon, &c.; the respiration became slower, and vomiting sometimes occurred. These attacks lasted about two hours, recurred frequently in the course of the day, and only ceased on the appearance of the blood. Infusion of arnica and enemata of assafoetida appeared to have most effect in bringing on the discharge. What eventually became of the case is not mentioned; the patient had been under treatment for two years for these attacks, when he joined the Sardinian service, and appears to have been lost sight of.

Passing over a chapter of some length devoted to the consideration of "lesions of sensibility and the senses," which, though judicious and concisely complete, contains nothing specially worthy of notice, we reach the author's exposition of his views concerning the causes of cerebral diseases.

The predisposing causes are hereditary influence, the critical period, the progress of age, parturition, certain sorts of character, "according to Gall" certain conformations of brain, and the influence of public events.

Hereditary influence is powerful in the transmission of cerebral affections, and is more obvious in the highest classes of society than the middle and lower. The first families have "either been extinguished in this way, or have in the long run fallen into a state of inevitable intellectual degeneracy, because their position obliged them to intermarry constantly, and confine themselves within the narrow circle of a few privileged houses."

At the critical period the equilibrium of the functions is disturbed, and the desire of pleasing increases as the faculty of doing so fails; it is at this period that well-bred women take refuge in the practices of devotees, while the uneducated apply for consolation to the bottle. Of the former class of persons, many of the so-called religious meetings are in great measure composed. It is they that annually send forth ignorant men to waste funds (that might be employed in relieving the poignant misery of our alleys and lanes) in compelling the simple children of nature to embrace a faith to the precepts of which the conduct of their emissaries but too often furnishes the most flagrant contradiction. Were it not for "*femmes passées*," and hysterical young ladies, "*qui se jettent dans la dévotion*" in search of a strong sensation, some of our Halls might shut their doors, and probably some amount of the venom of sectarianism be transmuted into the milk of human kindness. Hysteria is in truth not a mere family or personal annoyance by its paroxysms and petty vagaries; it is often a political curse. Why is it that in so many remote nations of the earth the aboriginal spirit of charity and content is sup-

planted by civilized hatred and social bitterness? Simply because knots of women, old and young, whose natural feelings have been interfered with, and perverted by the laws of society or otherwise, find a vent for their passions in getting up meetings, applauding inflammatory harangues and "*ingenious devices*" from men whose zeal seems to be generally in the inverse ratio of their judgment. In alluding to these matters we are not wandering from the legitimate field of practical medicine: the physician can propose to himself no higher aim than the correction of moral evil by the prevention or cure of physical imperfection; and if, as we are persuaded, the giant pest to which we have made allusion be in great measure the offspring of hysteria, by improving the prophylaxis of this, he elevates himself to the rank of a political benefactor.

But of all the causes, the most powerful are those "which depend on the conformation itself of the brain, and on an abnormal predominance of certain of its parts over others. In spite of the numerous exceptions encountered in practice, the general result that the excess of certain masses of the brain in its anterior, lateral, superior and posterior regions, as observed in numbers of individuals of sound mind, leads to inferences concerning their intellectual and affective characters which are deficient neither in justness nor profundity." In this modified, and even timorous way, does M. S. Pinel profess his adhesion to the system of Gall. But we believe (that is we, the writer of this notice,) that such adhesion is all that experience justifies. Our conviction upon the philosophy of Gall is this. First, that *phrenology* properly so called, that is the science of mind, as taught by Gall, is founded in truth, but that it is matter of certainty the division of the intellectual faculties adopted by him is very imperfect, while none other, not open to objection, has been proposed since the announcement of his own. Secondly, that *craniology*, the doctrine which discovers a power in the organs of the various faculties of modifying the form of the skull, has also its foundation in truth. Thirdly, as respects *craniotomy*, which is the art of practically applying craniology, we believe that it is sometimes successful, oftener fails, and, as conceived by its inventor, is destined for numerous and obvious reasons to remain, except as respects the grander divisions of the skull, an *impossible* art. Such an estimate of craniology can only be justified by experience,—to that experience we confidently appeal.

Respecting monomania of various kinds, as pleading against or in favour of Dr. Gall's doctrines, M. S. Pinel supplies no novel facts; but he insists on the importance of inquiring, in all available instances, into the evidence furnished by such cases.

In describing the "physical causes" of cerebral diseases, M. Pinel exhibits himself a disciple of a bygone school: "in describing these physical causes," he says, "we describe the diseases themselves, and the lesions on which they depend." Here the anatomical change is made the cause of the malady, itself constituted by a group of symptoms: this is neither consonant with existing doctrines, nor, we are persuaded, with sound pathology. The author attaches great importance, and probably not more than it deserves, to the particular manner in which he conceives the term, *seat* of the disease, should be understood in respect of cerebral affections.

It is not a particular part of the brain which will, in consequence of disease, produce such and such special symptoms; the very same mass of cerebral substance may give rise to very different functional effects, according as the intellectual, motor, or sensitive fibres composing it are specially altered. By attention to this suggestion (already made in an earlier paper) the *seat* of cerebral disorders will probably be eventually made matter of more ready determination than at present, when, as is notorious, such determination is, in the great majority of instances, impossible.

The first "physical causes" of cerebral maladies described by the author (they are described verbatim from Andral) are congestion and inflammation: states which we should regard as constituting the maladies themselves. There is nothing actually new in the author's comments on his extracts from Andral.

M. Pinel leads us to suppose that softening of the brain is particularly frequent among the aged inmates of the Salpêtrière during autumn. In them the disease "is rather a senile decomposition than an inflammatory process . . . this cerebral softening is asthenic, it has not the strength to be inflammatory." No evidence is adduced in support of this notion, which appears perfectly deficient in clearness. Be this as it may, the symptomatic forms under which the disease may present itself, are, according to the author, as follows:

1. Sudden loss of consciousness, with simple paralysis.
2. Sudden loss of consciousness, with persistent contraction.
3. Sudden loss of consciousness, with general or partial convulsions.
4. Consciousness not lost, intellect somewhat blunted, sudden affection of movement.
5. Consciousness not lost, alteration of movement gradually effected.
6. Absence of usual symptoms.
7. Absence of symptoms of any kind.

The reader will do well to compare these groups of symptoms with the statements on the same subject given in our analysis of the elaborate work of Durand-Fardel. (*Brit. & For. Med. Rev.* vol. XVI, p. 1, 1843.)

It has been taught by several observers that hemorrhage into the brain sometimes, though very rarely, takes place in the direction of the strata of fibres of the organ, in such manner as to separate these fibres to a certain extent from each other without actually tearing the cerebral substance; and it has been inferred that such mode of hemorrhage produces a lesion more readily susceptible of cicatrization than the common lacerative variety. M. Pinel takes upon himself to deny the reality of the fact, and consequently of course the justness of the inference. Now we have not ourselves had actual *experience* of the justness of the inference; it would be inconceivably difficult to obtain it, as will become obvious on the least reflection. But the inference is a fair one, if the fact be real; and that it is real we have ourselves had distinct and satisfactory opportunity of observing.

That there are some cases of excessive rarity in which hemiplegia occurs on the same side of the body as the hemisphere implicated in hemorrhage, M. Pinel attempts to explain by supposing that some structural anomaly may have been present. "May it not sometimes happen," he urges, "that the usual decussation of the fibres of the corpora pyramidalis



is in some individuals replaced by a state of simple juxtaposition,—just as displacement of the heart occasionally occurs.” The hypothesis is one which, at least, deserves to be put to the test of experience.

The author's observations upon “organic degeneration” of the brain are few and not remarkable always for accuracy. He says, for example, that cancer of the brain depends on a “general cancerous diathesis,” the truth being that there is a tolerably considerable number of cases on record, in which that organ was the only one in the body affected.

The doctrines professed by the author in the earlier parts of his volume would lead us to anticipate that in its closing division on Treatment he would exhibit himself a firm stickler for a system of therapeutics based upon the organic changes presumed to be present in each instance of cerebral disease. And he realizes our anticipations. He appears to fancy that the present state of acquaintance with the anatomical changes attending various groups of symptoms is such, as to make it possible for the physician to guide his treatment towards the modification of the former, and not the mere management of the latter. The “medicine of symptoms” appears to him sadly contemptible in respect of maladies of the brain; and the “polypharmacy of the English” receives in particular more than perhaps its meed of castigation at the hands of this self-satisfied author of an impossible crotchet. Impossible, we mean, in the existing state of knowledge, impossible in respect of every organ of the frame, impossible *per eminentiam*, we should have presumed, in the case of the brain. What, M. Scipion Pinel directs his treatment to the removal of physical conditions or organic changes in epilepsy, for example! Would that we had his secret for their discovery; for though it is quite within the range of probability that the efforts to cure permanently and completely that malady might prove as abortive as according to our experience they do at present, even were an organic change proved to exist in all cases, and the mode of detecting its nature and degree during life made obvious, still it would be a source of satisfaction to the physician that his attempts were made, not as in the present state of things, but with a distinct object, and upon feasible grounds.

But (as was again to be anticipated,) the examination of M. Pinel's chapter on treatment, shows that his system could not be, even by himself, adhered to clinically. The details of the chapter gain in common sense, precisely what they lose in adherence to that system.

A vast number of cerebral affections present the symptomatic appearances of “inflammatory irritation.” Here are comprised almost all such affections, indeed, at their outset; and here we meet two general indications of a precisely opposite character, depending on a state of hyperemia on the one hand, of anemia on the other. Fulness of the vessels is very frequent in acute affections of the brain, and is to be recognized by fulness and frequency of the pulse, and injection and a swollen condition of the superficial veins. “But,” comments the author, “a remarkable fact which has repeatedly been proved by observation, is that this excess, often far from augmenting the acuteness of the cerebral symptoms, appears to calm and act as a sort of sedative upon them. Although the curative indication be to disgorge the sanguineous system, the indication must be followed up with

extreme reserve. I have often seen women at the Salpêtrière, who had been treated elsewhere for temporary delirium, admitted in a state of furor, supervening after abundant loss of blood to which they had been submitted." True, and valuable as true; but if so, M. Pinel, what comes of the *anatomical* basis of treatment? And a little further on: "we often observe that the only effect of bloodletting is to diminish the state of hyperemia, and the intellectual disturbance continues in spite of it unaffected." Not a question of this; but might the fact not have led M. Pinel to reflect that there is something else beyond his state of hyperemia or anemia in the chain of morbid phenomena, and that at least as long as that something remains a secret, the notion of basing treatment upon lesions will continue a chimera.

M. Pinel's remarks concerning the use of the cold douche to the head in mania, deserve circulation; the shower-bath is but a variety of the douche, and the only variety almost used in private practice in this country. "If," he says, "some advantages have actually been obtained by the use of this agent, I must frankly avow for my own part, that its almost invariable effect is the precise contrary of that proposed. At the Salpêtrière the administration of the douche is a constant cause of exacerbation; the patients excite each other, vociferate, become riotous, or sometimes endure it with a forced calmness, which is not less injurious to them. . . . It is impossible to give it for any continuance to males, without causing general congestion and expression of the most agonizing suffering. . . . Better effects are ensured by allowing cold water to fall in a very thin stream, or even guttatim on the patient's head after he has been bound down in a proper position in his bed. . . . The repeated application of ice to the head is also an excellent means of relieving irritation of the brain."

M. Pinel's ignorance respecting the state of medicine in England is remarkable even for a Frenchman: he is probably proud of his ignorance, and if so, he has much to be vain of. It is not true, we may venture to inform him, that it is the general habit of English physicians to salivate maniacal persons. Such obfuscated glimmerings as have reached this writer's intelligence concerning English doctrine and practice appear to be derived from tradition, hearsay, and a translation of Ellis on Insanity; all of them sources to which, we apprehend, the body of English physicians would object, as unlikely always to furnish the most satisfactory or accurate accounts in the world of what they profess, and what they do.

The affection, called paralytic encephalitis, of which we have very briefly described M. Pinel's pathology in a previous page, may be considered to be represented by four principal forms of morbid change: acute inflammation; chronic inflammation; hypertrophy; atrophy. Are these affections distinguishable during life inquires the systematist; and may this diagnosis be established with such surety as to permit the treatment to be directed to each one of them in particular, according to circumstances? No, responds the practitioner. And he responds wisely; but what comes of the pretension to treat lesions and not symptoms, of the philosophy that disdains effects and looks to causes? It remains, where it was conceived, in M. Pinel's easy chair, whence if it have ever travelled to the bed-side, we

venture to affirm it can only have done so to the disadvantage of the patient, and the discomfiture of its author.

The symptoms of the affection are always identical in nature, "with the exception of inevitable differences in their course, their mode of invasion, and their severity,—all of which vary with predisposition of the individual." That is, they are identical in the present state of knowledge, but that they will always continue so, or that they are so in truth, is a matter of utter unlikelihood. When they have ceased to be so practically, M. S. Pinel may teach us how to treat lesions, meanwhile he contents himself with controlling symptoms, after the fashion (already referred to) of taking half a spoonful of blood by cupping from the nape of the neck every day for several successive months. At the same time he gives a weak infusion of arnica internally; and supports the patient with a nourishing and gently tonic diet. When the disease has advanced to the second stage, the great point is to prevent excoriations of the surface, by careful watching. In the advanced period of the affection, the two evils to be contended with are obstinate constipation or as unmanageable diarrhoea.

The indications in cerebral oedema are to free the brain by diuretics and revulsion. It is to be observed, that in this affection purgatives must be given in enormous doses to produce their usual effects; the author has administered twelve and fifteen drops of croton oil, without any other result than the production of ordinary evacuations. The same may be said of various systems of counter-irritation; they do not give rise to their ordinary painful effects, until some amount of improvement in the state of the patient becomes visible. Bloodletting increases the severity of the symptoms. Cold baths, and the application of cold water to the head, do not appear beneficial; but it is imagined that the affection is one in which sudden immersion in water (*bains de surprise*) would prove useful, by acting at once physically and morally, and "producing a salutary commotion." However, as the affection is rarely dangerous, and consists solely in a temporary suspension of the intellectual, sensitive, and motor functions, and as its duration may be diminished by revulsive and diuretic treatment, the author considers it much more prudent to limit ourselves to the latter plans.

If we were asked to state fairly our experience of the treatment of epilepsy, we should reply in the following terms, which we can scarcely doubt will accord with the opinions formed on the subject by the majority at least of our readers: that the malady may be rendered less distressing, that is by diminution of the violence and frequency of the paroxysms, under systems of treatment the most various, and some of them the most simple,—that an absolute cure can be *expected* from none, and is of infinitely rare occurrence under all circumstances. M. S. Pinel appears to have more confidence in belladonna than in any other drug; has tried indigo, without any other effect than that of dyeing the nails blue; has failed in producing any improvement with carbonic and hydrocyanic acids, the white oxide and the potassio-tartrate of antimony. The nitrate of silver "has often produced most serious effects on the stomach." M. S. Pinel has opened the body of an individual who had taken it for eighteen months, and found the stomach corroded in several places, and deprived of its mucous membrane at the fundus; whence he infers that nitrate of silver destroys the mucous

membrane. Whether it do or do not, the conclusion is, on the evidence adduced, palpably defective; where is the proof that the state of the membrane described was not produced by the gastric juice?—the appearances were precisely those of post-mortem softening. This is not the only instance in which but moderate familiarity with morbid anatomy and the necessities of logical reasoning is exhibited by the author of this volume.

The chapter upon the moral treatment of insanity is judiciously written, but we do not find any precisely novel suggestions. Importance is attached to sea-voyages, and especially the continued sickness with which in some persons they are attended: one favorable case is referred to in support of this opinion. Under the head of hygienic treatment, the most fitting mode of organization of an establishment for the insane, the classification of patients, the important question of their regimen, and that of the employments of various kinds to which they should be daily set, are successively considered. These chapters, if condensed, would lose their value, and had therefore better be consulted in the original, by those whom they are likely particularly to interest.

On the whole, this volume may fairly claim a place on the shelves of the practitioner particularly devoting himself to mental diseases; had it less of pretension about it, it would probably be read with more advantage, and would certainly do more credit to its author.

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### ART. III.

*A Treatise on Operative Surgery, comprising a Description of the various Processes of the Art, including all New Operations; exhibiting the state of Surgical Science in its present advanced condition. With Eighty Plates, containing 486 separate Illustrations. By JOSEPH PANCOAST, M.D., Professor of General and Descriptive Anatomy in Jefferson Medical College, Philadelphia, &c. &c.—Philadelphia, 1844. 4to, pp. 380.*

SUCH is part of the voluminous title-page of the latest surgical production of the American press that has reached us. It is of home growth, being the compilation of a native artist, and as such is entitled, on our part, to careful consideration; more especially as (we presume) it is intended to give an exposition of the art of operative surgery as it obtains in the Western hemisphere. We had observed the announcement of the work long before the volume came into our hands, and felt anxious for the opportunity of perusing an original treatise on the practice of surgery as followed by our American brethren. Here we apply the term "original" in contradistinction to the republication of the works of British authors on systematic surgery, with which the profession in America seem hitherto to have been contented. With Dr. Pancoast's name and professional reputation we were already familiar, and anticipated that we should find in his work a recompense for the careful perusal which we had resolved to bestow upon it. Our opinion on this subject we shall make known by and bye, but we must first carry our readers through the different sections into which the subject has been divided in the volume before us.

From an advertisement immediately preceding the table of contents, we perceive that the author has the desire that his work shall partake of the

character of a "continuous whole," such as the comprehensive and elaborate works of Froriep of Berlin, and Bourguery of Paris, but in a less voluminous and expensive shape; and though he does consider it his duty to make some "brief observations on the therapeutical management of surgical affections," he seems anxious that it should be considered he has done so "without invalidating the claims of the work to be especially considered as a practical treatise on operative surgery." We cannot but perceive, too, that the pictorial illustrations are in the author's estimation not the least important feature in the volume. Hence it is evident that the principles of surgery,—that the common every-day duties of the surgeon, are to have but little consideration, and that our attention is to be directed almost solely to the mechanical department of the healing art.

The whole work is arranged into four sections: Part I being devoted to "Elementary and Minor Operations;" Part II, to "General Operations, or those practised with reference to one or more particular tissues;" Part III, to "Special Operations, or those which are practised upon complex organs in particular regions of the Body;" and Part IV, to "Plastic and Subcutaneous Operations."

In going through part First, in which are comprised, 1, "the division of parts with the bistoury and scissors; 2, division by ligature; 3, phlebotomy; 4, arteriotomy; 5, cauterization; 6, reunion by suture; 7, setons; 8, issues; 9, moxa; 10, acupuncture; and 11, the means of arresting hemorrhage before, during, and after operation,"—a feeling came over us that we were looking only at what we had seen somewhere else—reading only what we had read before. We looked back to the "Advertisement" at the beginning, and being reassured, did not hesitate to proceed with part Second, which is devoted to "general operations or those practised with reference to one or more particular tissues." Here we found details of operations on veins and operations on arteries, set out with so much formality and precision—the old story of the "*process of Desault as modified by Delpech*," the "*process of Lisfranc*," "*ordinary process*," "*process of the author*," &c. &c.—that we grew sick at heart. We found that the same systematic parade which had often disgusted us with other compilers, was here also conspicuous. One man's plan was given with as much pomp as another's, the suggestion of the hero of the dissecting-room treated with the same consideration as the approved good work of the experienced practitioner, "*ligature of the ulnar near the termination of its upper third*," "*ligature of the ulnar either at the middle or inferior third of the forearm*," "*ligature of the ulnar below the pisiform bone*;" "*ligature of the anterior interosseal in the lower third of its course, (process of the author)*," standing in the same page with "*ligature of the abdominal aorta*,"—the one process being, in the author's estimation, seemingly of as much importance as the other. From a party who volunteered a "Practical Treatise on Operative Surgery," in a quarto volume, and who had "the advantage of nine years' continuous service in one of the largest hospitals in North America," we naturally expected some practical observations of a somewhat valuable character on the various operations which have been performed, or been proposed on the arteries of the living body. We did find in the course of

reading, that "the author" had accomplished some of those operations described; that he had tied the "femoral artery," (by which term he in reality means the superficial femoral,) four times, besides sundry other vessels, yet we felt not a little disappointed, as we concluded this section; we thought of the interest with which we had read Hodgson\* in our younger days; how Harrison† had made the surgical anatomy of the arteries our delight; how Hargrave‡ imbued us with his own apparent zeal; we brought to mind the glowing description of Crampton, when he first saw the common iliac artery; how our heart beat as we read the account of Mott's operation on the innominata; how we almost feared to read further, as we perused Colles's account of his operation on the subclavian on the inside of the scaleni. We also called to mind what American surgeons had done. We remembered that Stevens had first tied the internal iliac; that Gibson, and after him Mott, had first secured the common iliac; that the latter had first tied the innominata; that Mussey and Mott had tied both carotids, a brief time only intervening between each operation,—in short, that American surgeons had done so much in this department, which was original. We were shocked to find the author proceeding in the same dull round of trite conventionalisms. "Place of election," "place of necessity," "process of Sedillot and Zang!" We hardly thought it in the nature of things that an American author could set about telling us that "Nuntiante Ippolito relates two cases in which the vertebral artery was tied at its origin with success," (though on what account we are not informed;) and yet omit even the mention of Dr. Post's name, an American surgeon who first successfully tied the subclavian artery!

And now having glanced from plate to plate, we felt that we were familiar with all their contents. The works of Velpeau, Liston, Lizars, Fergusson, Bourguery, rose in our 'mind's eye!'—BOURGERY! we rested not an instant until we could throw open his ponderous tomes. And, there, sure enough, we saw the Philadelphia originals, the "large number of accurate drawings," obtained during "nine years' continuous service," &c. &c. yea, verily, the whole "eighty plates," (with the exception of some two or three,) exactly, and to say truth, neatly, and accurately copied from Bourguery. Good, bad, and indifferent—all, or nearly all were there! We compared the first thirty or forty plates with those of Bourguery, and failed in finding the originals of some eight or twelve only of the "separate illustrations." Even some of these we traced to sources not acknowledged by our author. Although we have not taken the trouble to examine the whole, we are pretty sure we are not wrong in asserting that there are not fifty original sketches out of the much vaunted "four hundred and eighty-six separate illustrations."

But why, it may be asked, all this astonishment at a thing which is so common in America? The Americans have as much right to reprint medical as other books; and it would be surprising if they did not. Neither do we object to this work as being a "compilation." Any systematic treatise on surgery can be little else in the present day; it may be so done

\* A Treatise on the Diseases of the Arteries and Veins, by Joseph Hodgson.

† The Surgical Anatomy of the Arteries, by Robert Harrison.

‡ A System of Operative Surgery, by Wm. Hargrave.

as to bear the stamp of as much originality as we might reasonably look for; and we expected such a work at least from Dr. Pancoast, more especially, when, on reading the "advertisement" prefixed to the volume, we received no hints to make us think otherwise. Here we are hardly given to expect so much as that the treatise is even a *compilation*, so carefully are the author's obligations to others kept out of sight. To be sure, he mentions the names of Froriep and Bourguery, as having preceded him in the attempt to collect the illustrations of surgical operations "into a continuous whole;" but who could for an instant imagine, from the following statement—the *strongest* one, in the Advertisement, bearing on this point—what is the real truth of the case?

"With these admirable treatises before him as a guide, and having at hand the greater portion of the surgical works, which have recently appeared in various languages, and with the advantage which nine years' continuous service in one of the largest hospitals of North America has given him, not only in comparing to a certain extent the value of the different methods, but in enabling him to obtain a large number of accurate drawings of operation which have been done by his own hand, the author has endeavoured to furnish a work that shall represent, so far as its limits will allow, the operative surgery of the day. In pursuance of this desire to portray the actual state of the science, many processes of operation have been given, for which the author cannot hold himself any farther responsible, than of having made of them a clear and impartial statement, drawn from the most authentic sources. The description of processes, too often given obscurely by their inventors, is confessedly difficult, and the author has not hesitated, when he believed he could thereby render their details more plain, to risk occasional repetition. The drawings, in almost every instance, have been represented in such a point of view, that the examiner may, in the stage of the process immediately shown, consider himself as the operator." (Advertisement.)

On reading this statement, who could help exclaiming, as we did—Here at last, is a treatise on operative surgery by an American surgeon, and just from such a party as we could have wished it? How heartily we accord with his opinion that such a treatise should be "thoroughly illustrated," and what may we not expect from a man who has had the treatises of Camper, Scarpa, Cooper, Hesselbach, Bell, Dupuytren, Froriep, Bourguery, together with "the greater portion of the surgical works which have recently appeared in various languages" before him, "as a guide;"—a man who has the additional "advantage which nine years continuous service in one of the largest hospitals in North America has given him, not only in comparing to a certain extent the value of the different methods, but in enabling him to obtain a larger number of accurate drawings of operations which have been done by his own hand." And the drawings, too, have been represented by this practical draughtsman and surgeon, "in such a point of view that the examiner may consider himself as the operator!"

Judge then of our disappointment when we found—what we have stated in the preceding page! The "originals" among the plates were so far and few between, that it became almost a labour to find one out. We generally did so, however, by a certain indifference of execution, showing that another "hand" than that of M. Jacobs (the artist of Bourguery's work,) had been there. As a striking example of this we may refer to plate 55, in Pancoast, where we have a double illustration

of the operation for excision of the mamma. One of them "taken at one of the operations of the author," contrasts most disadvantageously with the figure from Bourguery. It is professedly intended to show how "the chain of axillary glands enlarged and scirrhus," may be removed by an incision somewhat higher than that depicted by Bourguery, but it seems partly also to show that our author had actually done such an operation.

On turning to the letter-press of the work, we found the same or similar unacknowledged appropriation of M. Bourguery's, or some other surgeon's property. And, as we proceeded through the work, the conviction was irresistibly forced upon us, that the deception was seemingly as great in the one portion of the subject as in the other. The translations, no doubt, supplied favorable examples of Dr. Pancoast's powers in this way, for his numerous abbreviations did not in any material respect detract from the sense of the original, while they got rid of the prolixity of words so common with Bourguery, and most other French authors.

After this painful discovery, it now became a question with us whether we should proceed further. We had set ourselves to the task of reviewing an American author upon surgery, and found ourselves engaged in the perusal of a translation of a tolerably well-known French work, with which for the present we had no intention to meddle. Dr. Pancoast's mystification has been so much the more complete, as he has throughout carried on a kind of text of his own, which gives an air of originality sufficient to hood-wink those who may not be acquainted with Bourguery and the other authors on whom the "annexations" have been committed. Unquestionably, there is enough in this work of Dr. Pancoast's own, to show that he is a good practical surgeon; we nevertheless cannot perceive that his accumulated personal observations have been such as to warrant an essay of such apparent magnitude. His work is very defective on those very points in which we were especially interested; and we are greatly mistaken if his own countrymen will consider that he has done them justice.

Such a work as Bourguery's is one that we imagine may suffice for a generation; although the surgical part may not embrace all that we could wish. There is much in it that is mere matter of history, for few leading surgeons of the day are now interested in the principal processes which he details; they are historical records of what has already been done or recommended by those who have long since passed away. It cannot be overlooked, either, that Bourguery is more of a book-surgeon than one who performs the operations which he delineates; and it is vexatious to perceive that Dr. Pancoast, while he has detracted from what merit his prototype may have as a "continuous whole," has drawn none of those distinctions between the bad and what is in reality good and reasonably practicable, which might have been anticipated from one of his experience, but has reiterated a tissue of common-places and absurdities, quite intolerable to those in search of "the operative surgery of the day." In proof of this we may refer to the continuation of the "position" system with reference to holding a knife; eight different positions are detailed with all due gravity, each being illustrated with cuts; and these positions are further explained by as many more cuts showing how to hold scissors, and





how to make certain incisions! The minute detail of the whole process is amusing on account of its grave formality, but as well might a boy, when he first goes to a boarding-school with his silver spoon and fork, have set before him a minute description of how he is to hold and use the same, as that our young surgeons should be taxed to learn these "positions," or rather to read the description of them. As a further proof we may notice some of our author's remarks about the position of the surgeon when performing an operation. He is about to describe an amputation in the leg, and thus he proceeds:

"*Position of the operator.* This is a point in regard to which there is a great diversity of opinion; some surgeons always placing themselves on the inner side of the limb, so that in dividing the bones the section of the fibula may be completed before that of the tibia, in order to guard the more surely against the splintering of the former. Others, believing the neat division of the soft parts a matter of greater importance, take a position always on the right side of the limb, so as to be able to grasp it with the left hand immediately above the place of operation. The latter I have found most convenient in practice, and a surgeon familiar with the use of the saw will have no difficulty even in operating on the right leg, of dropping the hand so as to divide the fibula before finishing the section of the larger bone of the limb. For the posture of the operator, the following minute directions have been given by Lisfranc: The right thigh flexed at a right angle with the pelvis, the leg bent upon the thigh, and the foot resting flat upon the floor; the left thigh flexed at an obtuse angle with the pelvis, the leg at an acute angle with the thigh, the tuberosity of the ischium supported upon the heel, and the point of the foot upon the ground, with the legs separated in order to give greater solidity and precision to his movements." (p. 165.)

We were curious to know where our author had got this minute description, but had not even to look into Lisfranc's works to satisfy ourselves, for on turning to the corresponding part in Bourguery (t. vi, p. 243,) we read the identical passage. High as Lisfranc stands in our estimation, we think it no detraction from his merit when we object to a repetition of such details. But as Dr. Pancoast and we do not agree on this point, and as possibly there will be some who think with him, we shall say no more regarding it than that, in our judgment, he would have evinced a more practical estimation of his subject by omitting such farcical minuteness.

In the first section of the work—elementary and minor operations—there is little original matter of an interesting character. Under the head "compound incisions" (*incisions composées* of Bourguery,) after the usual abbreviations with reference to T's, V's, &c., our author enlightens us thus, partly from Bourguery, and partly from his own stock—at least we have not leisure to look for another authority.

"*Elliptical  and crescentic  incisions.* The latter is only occasionally employed. The elliptical is in much more common use, and serves for the purpose of removing a portion of the integument, when it is redundant, as is often observed over the upper eyelid; or when it is deformed by cicatrices in parts like the neck or face exposed to view. It is employed for the removal of large tumours, as those of the testicle or mamma, in which the skin, either from its being too abundant or from its having suffered by the disease, requires also to be in part taken away. The lower limb of the ellipse in this incision should be made first, in order to avoid the embarrassment that arises from the flow of blood, when the upper has been

previously formed. In many instances, and especially when the surgeon has not had sufficient practice to make him sure of his hand, it may be well to have the lines previously traced with ink or lunar caustic to ensure that the incision shall have its proper shape. Before using the knife the part must be made tense according to the directions given for the preceding operations. The *crescentic incision* is sometimes preferred to the elliptical for the removal of superficial parts, as the edges of the wound it leaves comes afterwards very nearly together. It is formed by two lines curved in the same direction, but belonging to circles of different diameter, that inclose between them a piece of skin thus  $\smile$ , which with the parts subjacent is to be removed." (p. 12.)

The almost obsolete rule regarding making the "lower limb" of the ellipse first, as also the recommendation to use caustic to mark the lines of incision are strange instructions for the practitioners of the 19th century, and how Dr. Pancoast can get his crescentic incisions to unite "very neatly" we cannot perceive. The cut we have given is a fac-simile of that in the text, and we imagine that if these lines were continued they would bear the mathematical relations to each other, that parallel lines do, that of never coming in contact. We presume that the Doctor meant to have given a cut of this  $\smile$  sort whereby two portions of circles of different diameter are represented as coming in contact.

Dr. Pancoast affects originality in the operation of arteriotomy, which is described thus :

"1. *Process of the author*. A fold of skin about half an inch broad is to be raised above the vessel, and divided by a strait sharp-pointed bistoury, passed through its base in a direction somewhat oblique to the artery. If no other instrument be at hand, the section may be made with the thumb lancet. The lips of the wound are to be separated with the thumb and fore finger of the left hand; the artery is to be laid bare with a few strokes of the point of the instrument, and punctured obliquely like a vein. The requisite amount of blood having been taken, the artery should be compressed with the finger below the wound and divided completely across. The retraction which follows usually stops the hemorrhage. The wound is then to be closed with two or three narrow adhesive strips, and secured with a double compress and roller. If the discharge is not immediately arrested a compress should be placed above as well as below the section, in order to prevent the return of blood by the anastomosing vessels. If the artery be large, a ligature for greater security may be placed upon it, or, which will usually suffice to stop the blood, the wound may be closed with a stout hare-lip suture.

And by way of contrast he gives us what he is pleased to call the "*usual process*."

"2. *Usual process*. The position of the artery being marked with ink, and the skin made tense above it with the thumb and index finger of the left hand, the artery is divided completely across with the convex-pointed scalpel, which should be pressed downwards directly upon it with the fore finger upon its back till it meets the bone, and then drawn slightly towards the operator." (p. 19.)

We think we can answer for our countrymen, this is not the *usual process* followed in this part of the world, and if it be that used in America the sooner it is forgotten the better: our author would have done well to have omitted the description altogether.

On the subject of cauterization we have a good account of the various kinds of potential cauteries, more especially of the different forms in which the chloride of zinc may be used, but no striking cases are given of its successful application.

In the rules for the application of sutures, our author states that "it usually suffices to pass the needle merely through the skin and subcutaneous cellular tissue; but in cases of deep cuts involving the muscles, or in wounds following resection or amputation, they may also pass with advantage through a portion of divided muscle." We doubt if the generality of our surgeons would agree in the latter part of this doctrine, and for ourselves, after considerable experience in resection and amputation, we should deem the practice of passing stitches through muscles objectionable on many grounds.

The first section of the work concludes with some observations on the means of arresting hemorrhage during and after operations. After enumerating and describing the methods resorted to by Amussat, Fricke, and others, it is sensibly remarked that "several of the various processes above detailed may be found occasionally useful in practice; but the surgeon who would wish to leave his patient with the nearly positive certainty that he will not be troubled with secondary hemorrhage, should tie the vessels," an opinion in which we are glad to say we most heartily concur.

Part Second, opens with "operations upon the veins." Transfusion of blood is first noticed as in Bourguery's arrangement, and then with some little changes here and there, we have the operations on varicose veins dished up *à la Bourguery*. We are pleased however to perceive that the author gives us a little of his own experience in such cases, and for the sake of doing him full justice, we shall quote as follows:

"*Compression over a pin or needle. (1st Process of Davat.)* Raise the vein in a fold of skin, through the base of which and below the vein a pin or needle is to be passed transversely. Around this needle is to be wound a harelip suture, sufficiently tight to keep the anterior and posterior surfaces of the vein in close contact. Several pins, from four to ten or twelve, should be employed at little distances from each other, upon the main trunk and its principal branches, so as to cut off effectually the route of the blood through the superficial veins, and cause it to return by the deep-seated. Velpeau prefers to surround the two ends of the pin merely with the thread in vertical turns, rather than in the form of a figure  $\infty$ , as it is less disposed to cause ulceration of the skin. An elliptical wrapping of the pin, however, as shown at fig. 4, is decidedly preferable to either.

"*2d Process of Davat.* After the introduction of one pin, as above described, a second is to be entered a little lower, perpendicularly *through* the skin and both surfaces of the vein; it is to be carried in the direction of the vein under the first pin, and brought out on the opposite side, piercing a second time the two surfaces of the vein and that of the skin. The two pins are at right angles with one another, and are each to be wound with the hare-lip suture. In my own practice, the first process has answered best. When the vein, as for instance the saphena on the thigh, is covered by a layer of superficial fascia, it is difficult to raise it up so as to pass the second pin readily in the prescribed longitudinal direction. Its effect also has appeared to be rather injurious than otherwise in producing two transverse folds of the vein, which keep the sides from coming so well in contact as when the single pin or needle is passed across and covered with a compress and bandage. From the sixth to the tenth day the obliteration will be usually found complete, and the pins may be removed. I have several times employed two or three separate pins in this way, upon the saphena along the inner surface of the thigh, when the enlargement of the vessels had extended from the leg upwards upon this region; while others were introduced concurrently upon the vessels of the leg. In no instance have I failed by this method to produce a cure, or very marked amelioration. A bandage wound tightly on the extremity from the groin

downwards, and perfect rest in the horizontal position, were the means employed to guard against the risk of the supervention of phlebitis, which, as reported by Velpeau, Lallemand, and Serres, has in some instances been attended by fatal consequences." (pp. 37-8.)

"Pour prévenir l'invasion des phlébitis mortelles, comme il dit être arrivé à MM. Velpeau, Lallemand, et Serres," as Bourguery has it.

We believe that the practice of meddling with the saphena on the thigh has not been often attempted in this country. We have ourselves tried it occasionally, though at the risk of being considered rash, and have observed the same immunity from danger, as has resulted in Dr. Pancoast's hands. Interfering with veins has been a bugbear with English surgeons for the last forty years or more, and we think it strange after the vast amount of modern experience, that there should still remain such a dread of touching them. We have seen varicose veins cut, torn, burnt with the potential and actual cautery, and tied in almost all methods, as innocuously as in similar proceedings with other tissues. We should have been pleased if Dr. Pancoast had given us some numbers, or referred to the practice of other American surgeons, to show to what extent this modern method of treatment has been followed out in that part of the world.

Our author being a teacher of anatomy, luxuriates on the "operations upon the arteries;" like most others of the same class, he dwells with as much minuteness upon the ligature of the fibular artery, as upon any of the iliacs; on ligature of the occipital artery as upon that of the carotid. He seems almost to go beyond Bourguery in telling what things may be done. We cannot resist a quotation here, were it only for the edification of some of our prosectors:

*Remarks.* The ligature of this vessel [occipital artery,] has not yet, I believe, been made upon the living subject. The position of the artery is such that in cases of wounds involving it, it may either be secured at the place of injury or compressed against the bone. Circumstances, however, may possibly arise,—such as aneurism, or a tendency to erysipelas presenting an obstacle to compression,—that may render the ligature necessary. A wound of the vessel near its origin, in consequence of the depth at which it is placed, and the difficulty of ascertaining precisely the trunk from which the hemorrhage arises, must be met by ligature of the external or primitive carotid.

*Operation.* The scalp having been shaved behind the ear, an incision is made through the skin an inch and a half to two inches long, beginning it at the posterior border of the sterno-cleido-mastoid, about a half inch behind and a little below the point of the mastoid process, and carrying it obliquely backward and upward in the direction of the superior curved line of the occipital bone. The aponeurosis of the above muscle is next divided, and the splenius exposed just below the line of insertion. The splenius is next to be divided the whole length of the wound, either by incision from above downwards with the knife, or on the groove of the director. The artery, which may now be felt pulsating, is to be isolated and tied. Particular care should be taken, as observed by M. Manec, not to open either of the accompanying veins, as from their connexion with the lateral sinuses of the brain through the mastoid foramen, they would bleed very freely." (pp. 50-1.)

Then follows, in the same grave strain, a description of the surgical anatomy of the posterior auris, with "remarks" and "operations," &c., all formally displayed.

In the remarks on deligation of the subclavian "within the *scaleni*," we observe an error of a serious kind which however, we are willing to impute to an oversight on Dr. Pancoast's part; "on the left side," he states "it has been but once tied, (by Mr. Colles of Dublin—the patient died on the ninth day,) in this portion of the vessel, and the complicated surgical relations which it has in that region, will serve to show that the operation, though not wholly impracticable, must be hazardous in the extreme." We well remember Mr. Colles's description of his operation on the right side, a proceeding which has been repeated on various occasions since, but must admit our ignorance regarding any such proceeding on the left; it appears to us that our author is altogether confused on this point.

Dr. Pancoast seems to have had considerable experience with regard to wounds of the humeral artery inflicted during venesection, and we have great pleasure in quoting from this part of his narrative:

"As soon as the injury of the artery by venesection or other means is detected, it is incontestably the surest course at once to recur to the ligation of the vessel, in order to prevent either of the consequences that may follow—the common form of false aneurism, varicose aneurism, or that to which I have limited the term of aneurismal varix. Two methods of proceeding are then open to the practitioner—to incise the parts at the bend of the arm, and to tie the artery above and below the place of puncture; or follow the method of Hunter, and tie it where it is more readily exposed in its course along the biceps muscle. If the operation is done *shortly after the occurrence of the injury*, the former method is not ordinarily the best, inasmuch as it is desirable to avoid an incision at the elbow, in consequence of the deeper covering of the artery, its complex relation with the veins of that region, and its obscuration from the extravasation of the blood which to more or less extent takes place. The method of Hunter is a more simple process, and if soon applied is equally successful; to which compression may if necessary be added at the bend of the arm; for it has been fully proved by experience, that the anastomosing vessels will not dilate so as to restore the circulation in the wounded trunk till sufficient time has been allowed for the healing of the puncture made in it by the lancet. A great accumulation of effused blood at the bend of the arm, pressing on the origin of the recurrent radial and ulnar arteries, might, however, as a case of exception, render it better to cut down, turn out the clot, and tie the brachial above and below the place at which it is wounded.

"The principles involved in the Hunterian operation, of tying the artery at a remote distance from the tumour, are not so binding here, where we have to deal with a sound vessel accidentally injured. A distant ligation, though it may answer if applied immediately after the injury, is not to be relied on in case much time has elapsed since the occurrence of the injury, if a large aneurismal tumour has been formed, or if compression has for some time been made from without; for from all these causes the anastomosing branches become enlarged, and the blood will find its way into the trunk at the elbow, both by the inferior arteries of the joint and the superior branch called the *anastomotica magna*. For these reasons I prefer always to tie the trunk an inch to an inch and a half above the joint and below the origin of the *anastomotica*. This simple operation has succeeded perfectly in my hands in four cases, which were respectively of four, five, eight, and nine weeks' standing, in each of which, tumours of considerable size had already formed. In another of nine weeks' standing, a case of proper aneurismal varix, upon which firm pressure had been steadily kept up, so as to cause great enlargement of the profunda minor, the pulsation of the veins, though not entirely removed by the ligation of the brachial, was and still remains considerably reduced by the operation, so that the arm has been restored to very nearly its

former degree of usefulness. A circumstance connected with the operation in this case is worth noting ;—pressure upon the brachial through the integuments above the elbow stopped all pulsation in the artery and veins below, the profunda minor, which was afterwards found greatly dilated, being at the same time in the line of compression. But after the ligature of the brachial, the profunda served to keep up some pulsation in the vein, through its anastomosis with the vessels below the joint." (p. 61.)

We wish that Dr. Pancoast had shown his acquaintance with the very successful practice of the late Mr. Tyrrell, by pressure in such wounds ; nevertheless we cannot read our author here without expressing regret that he had not written the whole of his book in the same practical strain and from his own stores. We feel that we should have had a very different task to perform than that on which we are at present engaged. Notwithstanding our objections to the minute details in this section, we feel bound to say that here the author considerably excels Bourguery. His historical details though far from being complete, are more perfect than those of the Parisian author. We cannot, however, forgive the neglect of his own countrymen in this interesting department. In a work where so much has been quoted both openly and furtively, we should have liked to have seen the manly accounts given by Mott, of his first operations on the innominate and the common iliac. He does state that "the honour of having first performed this most serious operation, is due to Professor Mott, of the University of the city of New York," but on the same page in which he describes the "process of Mott," we have the "process of King," chiefly, we suppose, because Bourguery has done the same. Why not rather have given "the process" of some other party who has accomplished the operation on the living body ? This want of discrimination between great and little authors, as between great and little processes, displeases us greatly in a work professing to be of a practical character. King, we suppose, used to show his operation in the dissecting-rooms in Paris ; hence the reason, probably, that he is given as an authority by Bourguery ; but that an American author should follow up Mott's name with that of King, awarding almost as much notice to the one as to the other, does indeed not a little surprise us ; especially when we couple this with other omissions, or, it may be commissions, of a like kind on his part. We hope that some friendly American will enter the lists in favour of Mott, Post, Gibson, and others. We should have much pleasure in doing so ourselves ; but grateful though the duty would be, we should prefer to see our Philadelphian author made to run the gauntlet by one of his own countrymen,

Further on we are glad to perceive that Dr. Pancoast gives his countrymen Drs. Barton, Rogers, and Gibson, all the merit which they deserve for their bold and ingenious operations in cases of ankylosis, and as these proceedings are not familiarly known in this country, our readers will doubtless feel interested in the details.

*"Formation of an artificial joint.* This method, for which we are indebted to the ingenuity of Dr. John Rhea Barton, of this city, has been applied as yet but to the ankylosis of a single articulation—that of the hip-joint. It has, however, been suggested by this skilful surgeon, that it might likewise be found applicable to similar affections of the lower jaw, knee, elbow, fingers and toes, when the muscles of these respective articulations remain uninjured. The method consists

in the uncovering of the bone at or near the diseased point, dividing it across with the saw, and subsequently moving the lower portion from time to time upon the upper, to prevent a solid reunion of the divided parts. By this mode of proceeding, there is the same disposition of parts for the formation of a false joint, as we often find producing that result in fractures where the bones are not kept sufficiently at rest. Under such circumstances, the two opposing surfaces of bone may be expected to unite by flexible ligamentous matter, or become smooth and polished by the friction; the lower fragment, in the latter case, rounding itself into the form of a head; and the other hollowing itself more or less into the shape of a cup, in which the former plays; the periosteum and surrounding cellular tissue becoming condensed and thickened, so as to perform the office of a fibrous capsule, and the muscles modified to a certain extent, to accommodate themselves to the new articulation.

*"For anchylosis of the hip.* The ingenious idea of remedying this deformity by the establishment of an artificial joint, was first practised by Dr. Barton in 1826. A similar operation was repeated four years subsequently by Dr. J. Kearny Rogers, of New York; the two constituting the only instances in which it has yet been attempted on the living subject. The patient of Dr. Barton was a young man twenty-one years of age, in whom the thigh was held immovably bent at a right angle with the pelvis, and the foot turned in rotation inwards. A crucial incision was made over the projecting portion of the trochanter major, the vertical division of which was seven inches in length, and the transverse five. The four laminae thus formed were dissected and turned back, and the fascia freely opened. The muscular fibres were then detached from over the trochanter by turning the scalpel sideways, so as to allow the two index fingers to be passed freely round the neck of the femur, till they met on the opposite side. With a strong straight saw the bone was then nearly divided through the upper part of the great trochanter and part of the neck of the bone. The operation lasted but seven minutes, and no artery was opened that required to be tied. The limb was then drawn to its proper position, when the undivided portion of the bone separated with a snap. The wound was closed with a few points of suture, and the extremity secured in the fracture apparatus of Desault.

"On the twentieth day after the operation the inflammatory symptoms had in a great measure subsided; some slight passive movements were then made with the limb, in directions natural to the healthy joint, which were cautiously repeated from time to time. By the sixtieth day the wound was completely healed; the patient was able to stand erect with the aid of crutches, and could advance his limb exclusively by muscular exertion. At the end of four months he was able to walk without apparent lameness, and all the movements of the limb were executed without pain. The foot could be carried twenty-two inches forward, twenty-six backward, and twenty outwards, and could be rotated inwards to the extent of six. The patient enjoyed the use of his artificial joint for a period of six years, at the end of which period, from causes attributable to intemperance and repeated falls upon the hip, the new joint became permanently anchylosed.

The operation of Dr. Rogers was equally successful, and his patient left the hospital at the end of four months, apparently with a perfect use of the new joint, as he could walk with ease by the assistance of a cane. Of the ultimate result in this case—whether or not the new joint in the end became anchylosed, as in the case of Dr. Barton, the profession has not been informed. In consequence of the shortening of the limb of the opposite side from fracture, Dr. Rogers, instead of making a simple section, removed a wedge-shaped portion of the bone, in order to render the relative length of the two limbs more equal.

"In place of dividing the bone after section of the soft parts, as above described it has been proposed, by M. Louvrier, to produce directly by mechanical means a fracture of the neck of the thigh-bone, a measure which he believes less dangerous than the former, and affording equal facilities for the formation of a false joint. But

provided it were possible to succeed in fracturing the bone at the desired point, there would be such danger by this method of doing violence to the surrounding parts, that it can offer no probable advantages to cause it to be compared to the neat and methodical section of the bone according to the method of Dr. Barton. It would be rather more easy to divide the femur below the trochanter, but by this method an all-important object would be lost—that of obtaining a new and solid articulation upon the pelvic bones, so as to reestablish the functions of the limb with the least possible shortening." (p. 89.)

This is followed by a description of Dr. Barton's bold and original "operation for straightening a bent and ankylosed knee-joint," which we noticed at the time in our Sixth Volume, p. 254. A similar operation, and with the like success, has been performed by Professor Gibson of Philadelphia.

We think the author has erred in judgment in giving the details of the disgusting process of Louvrier for straightening the knee-joint. The description of the "stretching apparatus" and the effects which are produced with it makes us shudder as if we were in the torture-room of the Inquisition. We should have been quite satisfied had the subject been merely alluded to; at the same time it would have been gratifying had Dr. Pancoast adverted to Dieffenbach's proceedings in such cases, and also favoured us with his views thereon. In our opinion it speaks well for our author's sense, when he thus remarks upon Louvrier's practice, "the consequences of these attempts have not been such as to sanction the adoption, especially as regards the larger joints, of a highly dangerous experimental operation, for a mere deformity, which does not in itself compromise life."

The successful issue of the operations performed by Barton and his followers are sufficient to arrest the attention of the surgeon. We are not aware that any similar operations have been performed in this country, nor do we think them of very general application; yet cases may from time to time occur wherein we might with advantage consult this leaf in American surgery, and we perceive that a case is alluded to wherein a great deformity of the leg resulting from a badly set fracture, was successfully treated by our author's colleague Professor Mütter, by cutting out a wedge-shaped portion of the callus.

It is only justice that we should speak in high terms of our author's observations on trepanning the bones of the cranium. Our limits will not permit us to quote them, but we have much pleasure in stating that they are highly to his credit, and betoken a well-stored mind. Dr. Pancoast has evidently studied the subject deeply, and this observation again leads us to express regret that he should have compromised himself so greatly by his servile imitations in so many other things.

A large space is devoted to the consideration of resection of bones, and at the commencement (p. 108), we are startled with the assertion that the chief source of danger after such operations is "the development of tetanus." We have no proof given that such a result is of common occurrence in America, certainly with us it is a rare event. Resection of the jaws, more especially the upper one, is dwelt upon at great length, and here as elsewhere the illustrations are chiefly drawn from Bourgery.

Excision of the elbow-joint, seems as yet a novelty with the Americans. We give the following account of an operation by the author, as at once



very creditable to him as a surgeon and a good specimen of his own style when he chooses to speak for himself.

"The patient was placed with his face downwards on a bed, over the side of which his arm was extended and supported by an assistant. Another assistant steadied the shoulder, and restrained the movements of the patient. A bistoury was now entered perpendicularly into the joint, on a level with the top of the olecranon, with its back almost in contact with the ulnar nerve, as directed by Syme, and the integuments, triceps tendon, and capsule, divided with a sawing motion completely across to the external tuberosity of the arm. From either end of this transverse incision, the integuments were divided through to the bone upwards as well as downwards for an inch and a half along the opposite margins of the arm, so as to give the wound the shape of the letter H, and form the two square longitudinal flaps of Moreau. The ascending incision, on the ulnar side of the arm, was inclined at its commencement a little towards the radius, for the purpose of more surely avoiding the course of the ulnar nerve. The flaps were dissected from the surface of the bone, and reflected upwards. The upper one was so loosened by suppuration from the end of the humerus, as to be readily stripped off. Its reflection upwards was more difficult in consequence of the great effusion of ossific matter in the cellular tissue on the side next the bone. The olecranon process was then sawed off at its base, in a direction slightly sloping towards the joint. The surfaces of the bones forming the joint were now well exposed to view; the ends of the humerus and ulna were found extensively affected with caries, and the synovial membrane of the interior of the joint, as well as that of the lesser sigmoid cavity, was soft and pulpy. The caries had not, however, extended beyond the articular epiphysis of the bone, though each bone at a considerable distance from the joint was thickened, and rough, and reddened by granulations in the process of formation. The ligamentous structures on the sides of the articulation were now cut through with the knife; care being taken in dividing the internal lateral ligament to loosen previously the ulnar nerve from its bed, and press it inwards with the left thumb, while the bistoury was introduced between it and the ligament with which it lies in contact.

"The arm was then bent and the radius twisted forward, so as to expose completely the external condyle. This was divided with a Barton's saw from a point just below the tuberosity nearly into the sigmoid fossa. The internal condyle was sawed in a similar manner, the forearm being twisted in the opposite direction, and the ulnar nerve pressed off with the thumb. The division of the bone was then completed with a pair of strong cutting pliers, partly by splitting and partly by cutting. Subsequent experience has, however, convinced me that a thin wedge shaped chisel, forced into the groove of a saw with the tap of a mallet, answers under such circumstances still better than the cutting forceps. The articular face of the bone thus separated from the shaft through the sigmoid fossa, was twisted off with a large pair of curved tooth forceps, and detached with the point of the knife. The ulna was now made to project backwards, and the soft parts separated from it on either side with the bistoury, for the space of three quarters of an inch; the knife being carried on with the edge in contact with the inner side of the bone, so as to avoid the nerve which runs parallel with its sloping surface. The carious head of the ulna, which was soft and filled with fatty matter, was then detached with the saw and chisel, and its whole articular face with the point of the coronoid process twisted away with the forceps. The base of the coronoid process was not removed, as this was covered with the insertion of the brachialis anticus, and forms no part of the joint. The head of the radius, on which the cartilage was softened, was pushed up so as to project from the orbicular ligament, and snipped off with the cutting pliers. All the pulpy portions of synovial membrane, including that of the two sigmoid fossæ, were removed.

"The forearm was now placed in a middle position between pronation and su-

pination; but to do this it was necessary to divide the orbicular ligament of the radius, which resisted the movement. The cavity of the wound was sponged clean of blood, two small arteries were tied, and the flaps closed with six sutures passed merely through the integuments. The elbow was but slightly bent, in order to favour for the first five days union by first intention in the divided integuments. Simple dressings were applied, and a patent felt elbow-splint well padded secured round the joint with a figure of 8 bandage. The arm in addition was fastened to a pillow, and rested upon an inclined plane. About eight ounces of blood were lost during the operation.

"The patient was placed under the free use of a solution of morphia in camphor water, and directed to keep the wound well wetted with a cold astringent lotion. The wound united nearly throughout by first intention, and notwithstanding a slight attack of pneumonia, which came on after the operation, he was sufficiently well on the ninth day to leave for his residence at a distance of about twenty miles from the city. Passive motion was directed to be kept up for a considerable period in the joint; and though the injunction was but imperfectly complied with, the patient has preserved a strong and useful arm, with free flexion and extension at the elbow." (p. 123.)

Our readers will perceive that this is nearly the same operation as has been so frequently and successfully performed by Mr. Syme of Edinburgh, and we hope that it will be appreciated by the Americans, as it is by all good surgeons in this country. Mr. Syme's operation, we believe, differs from that of Moreau and most others in this, that he takes away the smallest possible amount of bone,—that is, the diseased portion only, leaving the portions thickened with the new deposits alone.

The resections of bones in every region of the body are dwelt upon with a minuteness that should gratify the most fastidious anatomist, and Bourguery's work is of course largely drawn upon. We cannot, however, perceive anything likely to interest our countrymen, unless it be this:

"**RESECTION OF THE FIRST METATARSO-PHALANGEAL ARTICULATION.** *Process of the author.* In 1836, I removed at the Philadelphia hospital the entire metatarso-phalangeal joint of the first toe, preserving two thirds of the first and the whole of the second phalanx. The case was one of caries, caused by a spike nail run through the joint. The whole structure of the articulation was swollen and thickened, and two fistulous openings existed low down on the sides of the foot. I made a semicircular incision, which traversed these openings, and dissected the flap, the base of which was towards the heel, so as to turn it backwards upon the foot. This exposed completely the inner surface of the joint, and about half the length of the metatarsal bone. The joint was next opened, the metatarsal bone isolated from the tendon and the surrounding parts, and divided across near its middle with the metacarpal saw. On the removal of the fragment, the end of the phalanx was found carious: this was pushed out through the wound, and a portion a quarter of an inch long removed with the saw. The interior structure of the adjoining part of the phalanx, which was soft and spongy, was scooped out with the end of the scalpel. The ends of the divided bones were then put in contact, and the flap brought down and secured with adhesive straps and a retaining bandage. Some suppurative discharge continued for three weeks at the posterior angle of the wound; but it ultimately healed up well. Solid union took place between the divided bones, and the patient preserved his toe, which was found after the cure about three quarters of an inch shorter than the other. The only difficulty encountered in the after-treatment, was the tendency of the extensor muscle to elevate the point of the toe. Should I again have occasion to excise this joint, I would prefer to divide this tendon, in case I approximated the bones, inasmuch as the necessity for its use would be greatly diminished afterwards; the middle phalangeal joint, in regard to position

and office, supplying the place of the one excised; and there would be reason to expect that the reunion of the divided tendon would be sufficiently perfect to prevent (in conjunction with the dressing) the flexor muscle from drawing the point downwards. M. Petriquin reports a similar operation done by Professor Regnoli, of Pisa, in the case of a girl 20 years of age, and which he saw in the progress of cure. By this mode of operation we preserve well the shape of the foot." (p. 132.)

It has often been our lot to remove the great toe and metatarsal bone, in cases similar to the above, and we confess that the idea of resection never entered our mind, yet we shall think of it in future. In so far as our knowledge extends we believe Dr. Pancoast to be original in this process, and feel obliged to him for its introduction. We regret that no notice is taken of the effect of ankylosis in this part, but presume, since nothing is said to the contrary, that it produced no inconvenience during progression.

Our author commences the subject of amputation with some judicious observations in regard to the propriety of attempting to save a limb instead of refusing this last resource. He at the same time gives caution as to protracted delay.

"It is not," he states, "perhaps saying too much, when I aver, from the frequent opportunities which I have had of witnessing their performance, and the fair share that has fallen to my own lot, that from a combination of erroneous judgment, and a mistaken notion of humanity, the performance of these operations is frequently deferred until their chances of success when practised have been considerably compromised."

We have ourselves seen amputation performed, when in our opinion the process might have been dispensed with or delayed in hopes of a favorable issue otherwise, but feel satisfied that we have seen more gross errors by procrastination. In the alarm and bustle induced by some fearful accident, the surgeon may, on the emergency, commit a blunder which he would not during his calmer moments, but when a case has assumed a chronic character, and there is full time to deliberate, we hold him unpardonable who sees from day to day, that the disease still gains way over the constitution, and yet does not interfere, even though it be with this last of all measures calculated to save life. We hold it as the result, and as the test of experience, that when the case is left entirely to the judgment of the surgeon, he should at the proper time say that amputation should be done. It shows little in the practitioner's favour that he waits until the patient or the friends insist on an operation. At a certain period even a non-professional person can form a tolerably shrewd opinion as to the necessity of such a proceeding, and the surgeon is scarcely to be justified who shall at this juncture declare that it is now too late; that the favorable opportunity has passed by.

It is difficult to make out which operation our author himself prefers. We have "circular method," "flap method," "oblique or oval method," "mixed method," "1st process of Lisfranc," "2d, do. do.," "process of Cornuau," "process of Baudens," "do. of Dupuytren," "of Grosbois and Dupuytren," arranged in the due Bourgerie style, but a "process of the author" is of rare occurrence. Almost the entire of this portion of the work seems a counterpart of Bourgerie, with here and there a dash of novelty

from some other source, and occasionally a little of the author's own material. From this last we are glad to be able to extract an account of his method of performing amputation at the knee-joint :

*"Process of the author. Three cutaneous flaps.* The patient is to be placed upon the abdomen. The leg, flexed at a right angle with the thigh, is held by an assistant. The surgeon, placing the thumb and forefinger upon the condyles of the tibia at the opposite sides of the leg, makes with a common scapel on the front of the upper part of the leg, a semilunar incision which extends as far as three inches below the tubercle of the tibia, one extremity resting on either side an inch below the joint. The flap of skin is now to be rapidly dissected towards the joint. The leg is then to be extended and made horizontal. The point of the knife is next to be entered through the skin at the middle of the back part of the leg, an inch and a half to two inches below the fossa of the popliteal space, and carried vertically downward for the space of three inches. From the lower end of this, the knife is to be continued round on one side to strike the line of the first or anterior incision, so as to mark out a second flap, convex downwards, and extending a little lower than that of the one in front. The lower end of the vertical cut is then united by a similar convex sweep of the knife to the other margin of the front incision, so as to form a third flap. The two posterior flaps are next to be dissected from the fascia up to their base. The leg is now to be again flexed, and from the general loosening of the flaps already made, the insertion of the ligamentum patellæ upon the tibia will be exposed. This is to be divided across and the joint opened upon the front and sides so as to leave the semilunar cartilage on the head of the tibia; the crucial ligaments, as they become subsequently useful as a nidus for granulations, are to be divided at their connexion with the latter bone, and the posterior ligament lastly cut. The leg, which is now loose, is to be twisted on the thigh. An assistant grasps the popliteal artery with the thumb and finger, and the surgeon divides below at one stroke with the knife the remaining parts, consisting mainly of the two heads of the gastrocnemius, some of the hamstring tendons not previously cut, and the popliteal vessels and nerves. The patella is to be left in its position. The whole operation may be done with the scapel; the femoral artery should be compressed with the tourniquet." (p. 169.)

A sketch is given of the stump, and we may notice here, in passing, that the figures on the same page are among the few not taken from *Bourgery*. Their execution is evidently inferior to the copies from the *Parisian artist*.

The drawings are exceedingly useful to this part of the work, and we imagine that no apology would be admitted for a pupil of Dr. Pancoast's, were he to plead ignorance regarding any of the numerous processes which it seems his master's pleasure to teach. For our part, however, we should be lenient with the youth even if he did so, for our own brains have been somewhat muddled with processes "circular," "flap," "oval," and "mixed," with the usual quantity of dates and proper names, often of parties of whose "whereabouts" most people are in total ignorance.

We have now carried our readers over the first half of the volume, and fancy that we may be excused from minute consideration of the two remaining sections. With the exception of several illustrations of plastic operations, including some clever examples of nose patching, in which business our author seems to excel, nearly all the drawings are copied from *Bourgery*, and the letter-press is a sort of free translation from the same work, hashed up with Dr. Pancoast's additions. American surgeons seem

to have done a good deal in plastics, and this part of Dr. Pancoast's work is interesting; but as we have devoted many of the pages of our preceding Number to this subject, we will not dwell upon it here.

The various processes for the radical cure of hernia are carefully illustrated, (from Bourguery of course;) but we are happy in earnestly calling the attention of our own surgeons to the following practice of the author himself, which we have much satisfaction in quoting:

*"By injection.* This process, as employed by the author, is as follows. The contents of the hernia must be completely returned into the cavity of the abdomen, for the process is only appropriate to cases of reducible hernia, and those which are not of large size. The apparatus required is a minute trocar and canula, a small graduated syringe, capable of containing a drachm of fluid, well-fitted to the end of the canula, and a good-fitting truss for the purpose of making compression. The patient is to be placed on his back; the viscera are then to be reduced, and the truss applied over the external ring for the purpose of keeping them up, as well as to prevent the possibility of the small quantity of fluid thrown in from getting into the cavity of the abdomen. The surgeon then presses with the finger at the external ring so as to displace the cord inwards and bring the pulpy end of the finger on the spine of the pubis. At the outer side of the finger he now enters with a drilling motion the trocar and canula, till he feels the point strike the horizontal portion of the pubis just to the inner side of the spine of that bone. The point is then to be slightly retracted and turned upwards or downwards; the instrument is then to be further introduced till the point moves freely in all directions, showing it to be fairly lodged in the cavity of the sac. The point of the instrument should now be turned into the inguinal canal, for the purpose of scarifying freely the inner surface of the upper part of the sac, as well as that just below the internal ring. The trocar is now to be withdrawn, and the surgeon, again ascertaining that the canula has not been displaced from the cavity of the sac, throws in slowly and cautiously with the syringe, which should be held nearly vertical, half a drachm of Lugol's solution of iodine, or half a drachm of the tincture of cantharides, which should be lodged as nearly as may be at the orifice of the external ring. The canula is now to be removed, and the operation is completed. A compress should be laid above the upper margin of the external ring, pressed down firmly with the finger, and the truss slid down upon it. The patient is to be kept from changing his position during the application of the truss, and should be confined for a week or ten days to his bed, with his thighs and thorax flexed, keeping up steadily as much pressure with the truss as can be borne without increasing the pain, in order to prevent the viscera from descending and breaking up the new adhesions while they are yet in the forming state, or avoiding the risk of their becoming strangulated or being rendered irreducible by the lymph effused into the cavity of the sac.

"The author has practised this operation in thirteen different cases, in but one of which was there any peritoneal soreness developed that excited the slightest apprehension, and in this case it subsided under the application of leeches and fomentations. In several of these cases a single operation appeared to be perfectly successful. In others—where the sac was larger, or the patient was less careful in keeping the truss steadily applied during the first week, or from a cautiousness in introducing in the first cases a more limited amount of fluid—the effect was merely to narrow the sac, rendering a repetition of the process necessary for the cure. Of the permanency of the cure, during *several years after the operation*, the author is unable to speak, most of the patients operated on being temporary residents of the Philadelphia Hospital, and passing after a few months beyond the reach of enquiry. While under the cognisance of the author, they were employed without a truss as labourers on the farm attached to the institution, and in no one of the cases, during this period, had the hernial tumour recurred. It would, how-

ever, be but a proper measure of precaution to direct the truss to be worn subsequently for several months, in order to confirm the cure.

"The greater number of these operations were performed by the author eight years ago, before classes of students at the Philadelphia Hospital, but as he was able to trace the future history of the cases but for a few months only, they were not deemed of sufficient importance for publication. Very recently M. Velpeau has published a process almost precisely the same as that just described." (p. 283.)

Judging from this work, the Americans have had comparatively little experience in lithotomy, nor is there anything of interest in the section on lithotomy. Our author seems to have had little personal experience in either proceeding, and quotes from the works of Messrs. Syme and Fergusson as leading British authorities on those subjects. On lithotomy we are told that,

"This instrument [the gorget], as modified by the late Dr. Physick, in rendering the blade shifting so that it may be separately sharpened and made to bear the keenest edge, is the one generally employed in this country for the division of the prostate. It has probably been employed in two thirds of all the cutting operations for stone done in this city for the last thirty or forty years, and which, as shown by the statistical reports of the Pennsylvania Hospital, have been attended by as large an average of success as those by any other mode of operation. It is the favourite instrument of Professor Dudley, of the Transylvania University, who has operated a greater number of times than any other American surgeon, and with a success that has been unexampled." (p. 329.)

We have seen some very queer-looking American lithotomy instruments, which have not greatly exalted our views of American lithotomy, or American cutlery. Our Greens, our Listons and our Keys; our Weisses, our Laundys, and our Simpsons may look aghast when they read this:

"It has been objected to the gorget, that it makes the incision too mechanically and too *blindly*, it having no guide for its direction but the groove in the staff, that if it slide from the latter instrument it may plunge between the bladder and the rectum, and that the cutting edge of the gorget, even when it keeps the proper direction, may enter so far as to wound the posterior surface of the bladder. These objections, which might have been tenable against the imperfectly-sharpened instrument heretofore employed in Great Britain, are wholly inapplicable to the keenly-set gorget of Physick, which requires but a gentle effort for its introduction, and in the hands of no one who understands the use of cutting instruments can possibly either slip from the staff or wound the posterior wall of the bladder." (pp. 329-30.)

But we must bring this article to a close. Our disappointment with Dr. Pancoast's production is, we doubt not, sufficiently manifest. We were led to expect something totally different. We expected in reality to see 'Pancoast's Operative Surgery,' when we read this title on the one side of the volume, and were not prepared to find that we had before us little else than a portion of Bourguery's work on the same subject. Though we are carefully told in the "advertisement," that Bourguery is "but little more than half completed," it has sufficed to fill our author's volume, which comprises, to use his own language, "the operative surgery of the day."

We refrain from giving a deliberate opinion upon Bourguery at the present time, but have no hesitation in saying that the operative surgery of that work is more an exposition of French surgery than is entirely to our taste. If our "author" and publishers together, chose to disseminate this

style of surgery, or if the Americans are pleased with it, we have no reason to object, but we must protest against this method of bringing the subject forward. We think it hard enough upon real authors and publishers who have been at great labour and expense upon original works, to have their property seized upon, as it often is, and sent forth to the American public, with the addition of an American editor's name; but this book shows a new feature in "the trade." Here is the unfortunate Doctor Bourgery so squeezed, so mutilated, so truly "translated," (in Bottom's phrase,) that for a time he will scarcely be able to recognize himself; authors knowing well that they cannot have any of the emoluments from these American reprints, may surely be permitted the gratification of seeing their names appended to their own works, even though placed in juxta-position with those of American editors, who have made the productions "complete" with some notes and amendments. But it is too bad that appropriation should be carried so far as to strike an author's name from a title-page, and substitute that of a commentator. Had this work appeared as a translation or abridgment of a portion of Bourgery with alterations, notes, and additions by Dr. Pancoast, we should not have complained, and should possibly have given Dr. Pancoast credit for his annotations; but we can scarcely find terms sufficiently strong wherewith to express our opinion of this novel method of appropriating copy-right.

In our opinion Dr. Pancoast would have produced a much more valuable volume had he given more from himself and less from Bourgery, and the whole might have been published in a less costly and more portable style. As a work of reference it is much inferior to the original Bourgery, and infinitely behind the admirable treatise of Velpeau; and as a handbook for the practitioner, it is not to compare with those which have issued from our own press within the last eight or ten years; works which we believe are in extensive circulation among our author's countrymen, in the shape of American editions.

We do not think it necessary to criticise our author's style, although it is anything but unexceptionable, but we have great fault to find with the references to the plates and figures. Some of the plates are not numbered at all, and the errors of reference as regard the figures are of frequent occurrence, and sorely trying to the patience of the reader. In our copy we have searched in vain for plate 28, (possibly the binder's fault,) which exhibits the author's mode of excising the elbow.

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#### ART. IV.

*Urinary Deposits, their Diagnosis, Pathology, and Therapeutical Indications.* By GOLDING BIRD, A.M. M.D. Assistant Physician to and Lecturer on Materia Medica at Guy's Hospital, &c. &c.—London, 1844. Small 8vo, pp. 324; with Thirty-one Wood Engravings.

THIS extremely neat and compact little volume contains the valuable lectures published by Dr. Golding Bird in the 'Medical Gazette,' in the early part of 1843, extended and almost completely rewritten; so as to include the latest information on the subject, derived both from the author's large field of public experience, and from foreign sources. "In coming

in contact with pupils, in the course of my duties as a teacher of my profession, and in mixing with medical men in practice," Dr. Bird remarks, "I have often found them in want of some work, which would enable them readily to discover the nature of a deposit in the urine, and succinctly point out its pathological and therapeutical indications." The re-introduction of the microscope for the diagnosis of urinary deposits,—which instrument was employed a century ago for this purpose by Van Swieten,—removes the objection which has been frequently urged by practitioners against the possibility of a minute acquaintance with disorders of the urinary secretion; since a minute or two is sufficient for the observer to learn the nature of any variety of sediment, when he possesses such a complete series of types for comparison, as those which are figured in this Manual.

While endeavouring to describe minutely the diagnosis and pathology of urinary deposits, Dr. Bird has not thought it necessary to enter as fully into the consideration of their treatment; this having been already discussed fully by Dr. Prout and Sir B. Brodie. He has made an exception, however, in regard to the oxalate of lime deposit; on which he has enlarged more fully, in consequence of the scanty amount of information as to its pathology and treatment, to be found elsewhere. We shall now briefly follow Dr. Bird through his treatise; with the view of impressing upon our readers our sense of the value of his inquiries, and of making them comprehend the vastly increased facilities which are now presented to them, in the diagnosis of this most important class of diseases. And if there is one set of diseases more than another, in which an accurate *diagnosis* is essential to correct *treatment*, it is that with which we are now concerned. Any mere empirical prescription, applied to a deposit in the urine, whose chemical nature has not been ascertained, either by the microscope or by analysis, is at best but a chance remedy, which is about as likely to be really serviceable, as Morison's pills or Solomon's balm of Gilead. There is no department of medicine, in which pathological science is contributing so much to the improvement of the therapeutic art, as it is doing in this; and there is none in which the improvement may be so readily made available in practice. We regard Dr. Bird's little treatise as possessing very great value in this respect. It is essentially a *practical* one; designed to teach the true interpretation of the class of symptoms presented by abnormal states of the urine; and to lead from these to the pathological conditions of the general system indicated by them. The clearness and precision of thought, which result from the study of natural science, are everywhere apparent in this treatise; and we know of no work which we can more conscientiously recommend to our young authors, as (with the exception of a few inaccuracies of style) a model of correct composition. Unlike too many of those aspirants for literary reputation, whom we have lately had occasion to chastise with unsparing hand, Dr. Bird has, in the first place, something of real novelty and importance to tell his readers; and, in the second, he has told it simply, briefly, and well. His first paragraph will show that he is far from resting in the empirical application of remedies to the various morbid phenomena, which it is his object to render easily distinguishable; but that he estimates them at their true value,—namely, as *signs* of disease, not in themselves *diseases*.



"In availing himself of the phenomena presented by the urine in disease, it is essential that the practitioner should not fall into the error of regarding a knowledge of the morbid condition of the secretion as alone essential in directing his treatment; nor must he commit the equally serious mistake of regarding every deviation from the natural conditions of the urine as constituting a disease *per se*. The only view that can be legitimately taken of such conditions is to regard them not as constituting entities of morbid action, but as one of a series of pathological changes going on in the system, and more valuable than others as an index of disease, in consequence of the facility with which it is detected. Hence every abnormal state of the secretion in question should be regarded rather as an indication of some particular phase of morbid action, than as constituting the ailment itself." (p. 2.)

On the first chapter, which treats of the *Physiological Origin and Physical Properties of the Urine*, we need make little remark, since Dr. Bird's views in the former points closely correspond with those which we have recently had several occasions of expressing; and on the latter part of the subject, there is, from its very nature, little new to be said. We must not omit to notice, however, a very useful table of the different colours presented by the urine in disease; showing the usual causes of these colours, the means of determining them by chemical reagents, and the pathological conditions which they indicate. The following observation we believe to be novel. It is well known that the urine occasionally coagulates spontaneously on *cooling*; but in a few rare instances, occurring chiefly in urine loaded with oxalate of lime, Dr. Bird has found it quite fluid when cold, and gelatinizing when *heated*, retaining its transparency. At the end of this chapter is a short account of the mode in which polarized light has been recently applied by M. Bouchardat (according to the plan originally proposed by M. Biot) to the detection of sugar in urine; but Dr. Bird is not of opinion that it can ever be generally employed, on account of the many difficulties in the way of its practical application.

The second chapter embraces the *chemical physiology of the urine*; and we shall notice a few of the chief points of interest discussed in it. Notwithstanding the doctrine recently propounded by Liebig, that the uric acid of the urine is held in solution by the phosphate of soda, combining with a part of the base, and setting free a portion of the phosphoric acid, Dr. G. Bird still adheres to the opinion of Dr. Prout, that the uric acid is combined with ammonia; and he states it as a conclusive argument in favour of this view, that, if healthy urine be slowly evaporated in an air-pump vacuum, it soon becomes turbid from the formation of clouds of urate of ammonia,—as also occurs when urine of rather high specific gravity is exposed to cold. The objection urged by Becquerel,—that a single drop of nitric acid is sufficient to precipitate all the uric acid naturally contained in a considerable quantity of urine,—is of no weight when it is remembered that this quantity is quite sufficient to neutralize *all* the ammonia that was previously in combination with the uric acid. Hence a modification is required in Liebig's views; since, although they account for the solution of uric acid in warm urine, for the deposition of crystals of impure uric acid on cooling, and for the natural acidity of the fluid, they do not account for the deposits of urate of ammonia just noticed. These are believed by Dr. Bird to result from the action of nitric acid on the triple phosphate of soda and ammonia; which salt, or its elements, may be

regarded as a constant constituent of healthy urine. When uric acid is mixed with a warm solution of this triple phosphate, urate of ammonia is formed, and is deposited in a crystalline form on cooling; and phosphoric acid is evolved,—either free, or in combination with a base forming an acid salt. The following view is proposed by Dr. Bird, as to the mode in which uric acid exists in urine.

“Uric acid, at the moment of separation from the blood, meets the double phosphate of soda and ammonia derived from the food, and forms urate of ammonia evolving phosphoric acid, which thus produces the natural acid reaction of the urine. If the whole bulk of the urine be to the urate of ammonia formed not less than about 2700 to 1, the secretion will, at the ordinary temperature of the air, remain clear; but if the bulk of the fluid be less, an amorphous deposit of the urate will occur. On the other hand, if an excess of uric acid be separated by the kidneys, it will act on the phosphate of soda of the double salt; and hence, on cooling, the urine will deposit a crystalline sediment of uric acid sand, very probably mixed with amorphous urate of ammonia, the latter usually forming a layer above the crystals, which always sink to the bottom of the vessel.” (p. 42.)

We cannot but regard this view as highly probable; and think that in this, as in other instances, an insufficient acquaintance with the phenomena of health and disease has been the cause of error in the determinations of Liebig. The idea suggested by him, however, in regard to the part performed by the phosphates in the composition and reactions of urine, is obviously of great value; and the chief modification proposed by Dr. Bird consists in the substitution of the triple phosphate of soda and ammonia, for the simple bibasic phosphate of ammonia, so as to account for the deposition of urate of ammonia, as well as of uric acid.

In his estimate of the views of Liebig, in regard to the sources of the production of urea and uric acid, Dr Bird's opinions completely accord with those heretofore expressed by ourselves; and they are borne out in a very striking manner by the recent experiments of Lehmann, who has shown that the quantity of *urea* contained in the urine, during the use of an exclusively animal diet, was between three and four times as much as that, which was present during a diet of non-azotized food, and which might therefore be regarded as representing the actual *waste* of the system. The proportion of *uric acid* was twice as great in the former case as in the latter.

In regard to the supposed presence of lactic acid or lactate of ammonia in the urine, Dr. Bird seems to rely upon the recent experiments of Liebig as proving that chemists have been in error in this matter; and that what has been mistaken for lactic acid is really a peculiar crystallizable matter not hitherto described. But considering the close relation which lactic acid bears to some of the most ordinary elements of food, he seems to regard its occasional presence as not unlikely, even though it be not one of the normal constituents of urine.

Dr. Bird's researches accord with those of Liebig, in establishing the presence of hippuric acid as a normal component of urine; but he thinks that its quantity in health is not constant, and that it is always,—except after the ingestion of benzoic or cinnamic acid,—much less than has been stated. The following idea appears to us as probable as it is ingenious:

“It is possible that hippuric acid may constitute a means by which carbon

may be evolved from the system by the kidneys; and it is probable that, in cases in which the proper emunctories of this substance, the lungs and liver, are deficient in their function, the kidneys may partially compensate for this, by secreting a larger proportion of hippuric acid. It is remarkable that this substance, next to the bile, is the richest in carbon of any of the products of vital chemistry; and hence it very probably performs an office of great importance in the body. A comparison of the per-centage composition of the organic material of human bile, from the analysis of Dr. Kemp, with that of hippuric acid, will show the relation between them, *quoad* the amount of carbon:

Human Bile.	Hippuric Acid.
68-40	63-93
3-44	8-21
10-13	4-64
18-03	23-22
<hr/>	<hr/>
100-0	100-0* (p. 51)

This idea corresponds very well with the fact, that the ingestion of a large quantity of carbonaceous food is as favorable to the production of hippuric acid in man, as in the herbivorous animals; thus Dr. Bird learned from Professor Liebig, that a girl in the hospital at Wurzburg having refused all food excepting apples (of which she devoured an enormous quantity), her urine was found to contain a large quantity of hippuric acid, but no uric,—like the urine of a horse or cow.

On the nature of the red colouring matter of the urine, Dr. Bird is at issue with the other authorities on the subject. By Dr. Prout it is regarded as a purpurate of ammonia; and this by Liebig has been termed *murexid*. Dr. Bird adduces very sufficient reasons, however, for the belief, that the colouring matter in question is a substance *svi generis*, and is not identical with either. Thus *purpurine* (as he terms it) is readily soluble in alcohol; which *menstruum* is without action on purpurate of ammonia or *murexid*; and the reactions of the two with various tests are very different.

On the *chemical pathology of uric acid and its combinations*, which forms the subject of the third chapter, we may be very brief, as this topic has frequently engaged our attention of late. The chief feature in Dr. Bird's treatment of the subject, consists in the fulness of his account of the microscopic characters of the deposits; which is elucidated by numerous woodcuts, enabling any person possessed of a tolerable microscope to recognize them without any difficulty. The figs. 6, 7, (p. 68,) represent two varieties which are sometimes met with in the crystallization of uric acid, when it forms coarse sand of a deep orange or red hue. The little aggregations of crystals here figured may be regarded, indeed, as minute calculi; and those of the lozenge form, which are particularly met with where a marked tendency to the formation of calculi exists, are not unfrequently found crystallized upon a hair, like sugar-candy on a thread.

Dr. Bird lays much stress, and we think quite deservedly, on the *skin* as a channel for the excretion of azotized matter, and attributes the increased amount of urate of ammonia found in the urine after a check to perspiration, to the temporary suspension of that excretion, and the compensating action of the kidneys. In proof the excretion of azotized matter from the skin,—which has been doubted and even denied by some,

he mentions the following interesting experiment: "Dr. Faraday calcined pure river sand, and on heating it with hydrate of potass, it yielded no trace of ammonia. On merely passing this sand over his hand, and then treating it in a similar manner, ammonia evolved. A piece of ignited asbestos by mere pressure for a short time between the fingers, absorbed enough of some nitrogenized organic matter, to evolve ammonia, when heated with hydrated potass." (p. 77.)

After discussing the theory of Liebig in regard to the causes of excess of uric acid, — on which we find Dr. Bird's views quite in accordance with our own, — he thus continues:

"Excluding all abstract theories, whenever an excess of uric acid or its combinations with bases occurs in the urine, a normal quantity of water being present (30 or 40 ounces in twenty-four hours), it may safely be inferred that one or other of the following states exists."

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|--|---|
| a. Waste of tissue more rapid than the supply of nitrogenized nourishment, as in . . . . .   | } Fever, acute inflammation, rheumatic inflammation, phthisis.  |
| b. Supply of nitrogen in the food greater than is required for the reparation and supply of tissue, as in . . . . .                              | } Excessive indulgence in animal food, or the quantity of food remaining the same, with too little bodily exercise. |
| c. Supply of nitrogenized food not being in excess, but the digestive functions unable to assimilate it . . . . .                                | } All the grades of dyspepsia.  |
| d. The cutaneous outlet for nitrogenized excreta being obstructed, the kidney is called upon to compensate for this deficient function . . . . . | } All or most stages of diseases attended with arrest of perspiration.  |
| e. Congestions of the kidneys, produced by local causes . . . . .  | } Blows and strains of the loins, diseases of the genital apparatus, &c.  |

The following is, we believe, a novel suggestion in regard to the treatment of the uric acid diathesis.

"The remarkable solvent action of phosphate of soda on uric acid, to which Liebig has lately directed attention, inspires a hope that its administration may be of use in cases of calculous disease, by impregnating the urine with an active solvent. All that is required to ensure this drug reaching the urine is to administer it in solution sufficiently diluted; ʒj to 3ss might be administered in any vehicle, as in broth or gruel, as when diluted the phosphate tastes like common salt, and few persons object to its flavour. I have administered this drug in two very chronic cases of uric acid gravel; and in one with the effect of rapidly causing the disappearance of the deposit. This occurred in the person of a lady about forty years of age; who had, at my wish, for some weeks used the artificial Vichy water of the German Spa at Brighton without relief. The triple salt, ammonio-phosphate of soda, would perhaps be a more active remedy than the simple phosphate; but its disagreeable flavour constitutes one objection to its employment." (p. 98.)

The following we consider a very just appreciation of the value of different classes of remedies, in the treatment of these disorders.

"It is important to bear in mind that, by the employment of remedies capable of dissolving a deposit in the urine, we are merely palliating, not curing, the disease. And we must never lose sight of the great importance of endeavouring to remove that pathological state of the whole system, or of any particular organ, which may be the exciting cause of the calculous formation. Nothing but a careful investigation of symptoms can put us in possession of the knowledge necessary for this purpose; still, solvent remedies are not to be despised; for when the disease is chronic, and does not readily yield to treatment, it is of the utmost importance to prevent the formation of a calculus, or to lessen the irritation pro-

duced by the presence of gravel, whilst endeavouring to remove the primary affection which led to the formation of the deposit." (p. 101.)

Dr. Bird's observations upon Purpurine, the chemical pathology of which is discussed in the fifth chapter, possess considerable importance; on account of the serious lesions of which he considers its presence to be frequently indicative. This substance is usually found in combination with urate of ammonia; which has so strong affinity for it, as always to become deeply coloured by purpurine, when deposited from urine in which it is present.

"The presence of an excess of purpurine is almost invariably connected with some functional or organic mischief of the liver, spleen, or some other organ connected with the portal circulation. The appearance of a flesh-coloured deposit in the urine is the commonest accompaniment of even slight derangement of the hepatic function, as every case of dyspepsia occurring in gin-drinkers points out. The intensity of colour of the deposit appears to be nearly in relation with the magnitude of the existing disease. In the malignantly-diseased, in the contracted, hobnail, or cirrhotic liver, the pink deposits are almost constantly present in the urine. They also are of frequent occurrence in the hypertrophy of the spleen following ague. The most beautifully coloured deposits I have seen occurred in ascites connected with organic disease of the liver; and I think I have received some assistance in the diagnosis between dropsy depending upon hepatic and peritoneal disease, in the presence of pink deposits in the former, and their general absence in the latter. I have occasionally seen the deposits in question occur in phthisis; when large quantities of pus were poured out from vomica; as well as in deep-seated suppuration, as in psoas abscess. But even in these cases, the portal circulation is probably more or less influenced. My experience, indeed, leads me to express a firm belief, that an excess of purpurine is almost pathognomonic of disease in the organs in which portal blood circulates." (p. 110.)

The succeeding chapter, on the *chemical pathology of cystine*, contains, we believe, a fuller account of that curious substance, than is elsewhere to be met with; but as the rarity of its occurrence, and our want of therapeutic indications regarding its treatment, render it a subject of little practical importance, we shall dismiss it with a very brief notice. Cystine is considered by Dr. Bird as a derivative of albumen, or of tissues into which it enters; and appears to be the result of derangement of the secondary assimilative processes, essentially connected with the elimination of sulphur, every ounce of cystine containing more than two drachms of this element. There appears sufficient evidence that its appearance is connected with a scrofulous diathesis, and that it is disposed to be hereditary. Dr. Bird agrees with Becquerel in referring cystine to the same origin with urea and uric acid; and gives a formula, which shows that 1 urea + 1 uric acid + 4 sulphuretted hydrogen, will be equivalent to 2 cystine + 4 nitrogen.

To Dr. Bird's account of the *pathology of oxalate of lime*, which forms chapter vii, we are especially desirous of directing the attention of our readers; since he has proved, quite satisfactorily in our opinion, that this substance is a far more frequent deposit than has been hitherto supposed. It is remarkable that even the most recent writers on calculous affections, whilst tracing the history of oxalate of lime as a material of calculous formations, should not have detected this substance in urinary deposits. Thus in Dr. Prout's classical work, the remarks made on the oxalate acid

diathesis apply to the cases in which the oxalate of lime has existed in a truly calculous form; or to those in which the presence of oxalic acid is rather suspected than proved; and the only case of the spontaneous occurrence of oxalate of lime in the urine, quoted either by M. Rayer or by Dr. Willis, is one which some years ago occurred to Dr. Bird himself, and was described by Dr. Brett. The chief results of Dr. Bird's subsequent inquiries have been already given to the world in the *Medical Gazette*; but we shall not apologise to our readers for here giving a brief analysis of them, since they cannot be too strongly impressed upon their minds.

Dr. Bird's examination by the microscope, and by chemical analysis, of many hundreds of specimens of diseased urine, has led him to discover the *comparative frequency* of oxalate of lime in the urine, in fine and well defined octohedral crystals; and to establish the connexion between the occurrence of this substance, and the existence of certain definite ailments, all characterized by great nervous irritability. Dr. Bird's field of observation having been restricted to one set of conditions, he cannot, of course, form an opinion of the degree of connexion, which he seems to suspect, between the formation of this salt, and the depressing influences always more or less active in large and densely-populated cities; but he has no hesitation in declaring it to be the result of his own experience, that, in the metropolis, the *oxalate is of far more frequent occurrence in the urine than the deposits of earthy phosphates*. The cause of its having been so generally overlooked appears to lie in the curious fact, that this salt never subsides so as to form a distinct deposit, but remains for days diffused through the fluid; even when present in so large a quantity, that each drop of the urine, when placed under the microscope, is found loaded with the crystals. Moreover, as its refractive power nearly approaches that of the urine, its presence occasions little or no turbidity, and the floating particles escape even attentive observation by the unaided eye. Dr. Bird's figures, figs. 17, 18, 19, represent the forms exhibited by these crystals under the microscope. The first shows their usual aspect,—that of beautifully-formed transparent octohedra, with sharply-defined edges and angles. When allowed to dry upon glass, and then examined, each crystal presents a very curious appearance,—resembling two concentric cubes, with the angles and sides opposed, the inner one transparent, the outer black; so that each resembles a translucent cube set in a black frame, as shown in the second figure. And in a very few cases, the oxalate is met with in very remarkable crystals, or rather masses of crystals, shaped like two kidneys with their concavities interposed, and sometimes so closely approximating, as to appear circular, the surfaces being finely striated. This zeolitic crystallization was found mixed with, and ultimately replaced by, those of the ordinary octohedral variety. In almost every case of oxalic urine, a very large quantity of epithelial scales was found; and the white deposit of these frequently served to indicate the probable presence of the oxalate; whilst the freedom of oxalic urine from such admixture, formed the exception to the general rule. The following are Dr. Bird's conclusions in regard to the other characters of oxalic urine.

"1. That in rather more than one third of the cases of oxalic urine, uric acid or urates existed in large excess, forming the great bulk of the existing deposit.

"2. That in all, there exists a greater proportion of urea, than in natural and healthy urine of the same density; and in nearly 30 per cent. of the cases, so large a quantity of urea was present, that the fluid crystallized into nearly a solid mass on the addition of nitric acid.

"3. That the urate of ammonia found in the deposits of oxalic urine is occasionally tinted of a pink hue.

"4. That an excess of phosphates frequently accompanies the oxalate.

"5. That no evidence of free sugar has occurred in the specimens I have examined." (p. 135.)

Although the close chemical relation subsisting between oxalic acid and sugar naturally leads to the belief that a similar relation exists between diabetic and oxalic urine, yet Dr. Bird has not been able to detect any such relation; but he has, on the contrary, sought in vain for oxalate of lime in diabetic urine, or for sugar in oxalic urine. On the other hand, finding an excess of urea and uric acid in a large proportion of specimens of oxalic urine, he thinks it a legitimate conclusion that this disease is in reality a form of azoturia,—oxalic acid having been shown, by Liebig and Wohler, to be readily derivable from uric. We are not required, however, by this supposition, to refer the origin of the oxalic acid to the metamorphosis of the tissues; for, on the other hand, several circumstances lead to the belief, that, like urea and uric acid when in excess, it is to be referred to a *primary* mal-assimilation or non-assimilation of the elements of food. Thus the quantity of the oxalate is always greatest after a full meal; and its amount is much less in the *urina sanguinis*, or that passed on rising in the morning, from which it may be even altogether absent. Moreover it diminishes under the influence of a carefully-regulated diet; and increases again on a return to unwholesome food,—some articles which are themselves quite free from oxalic acid, having the power of at once causing the excretion of this substance in large quantities. Since, however, it has been proved by the recent inquiries of Dr. Buchanan, that sugar may be detected in the serum of even healthy blood, drawn soon after the ingestion of food containing a large proportion of saccharine or farinaceous matter,—a fact to which Dr. Bird does not here allude,—we cannot feel quite satisfied as to the entire absence of the relation between a mal-assimilation of the saccharine principle, and the appearance of oxalic acid in the urine. It is a confirmation of Dr. Bird's view, however, that an increase in the deposit of uric acid is generally (according to his experience) the first effect of remedies which diminish the amount of oxalate. The following are the general symptoms which he has observed to accompany this diathesis:

"Persons affected with the disease under consideration are generally remarkably depressed in spirits, and their melancholy aspect has often enabled me to suspect the presence of oxalic acid in the urine. They are generally much emaciated, excepting in slight cases, extremely nervous, and painfully susceptible to external impressions, often hypochondriacal in an extreme degree, and in the majority of cases labour under the impression that they are about to fall victims to consumption. They complain bitterly of incapability of exerting themselves; the slightest exertion bringing on fatigue. In temper they are irritable and excitable; and in men the sexual power is generally deficient, and often absent. A severe and constant pain, or sense of weight across the loins, is generally a prominent symptom. The mental faculties are generally but slightly affected, loss of memory being sometimes more or less present. Well-marked dyspeptic feelings are always complained of. Indeed, in most of the cases in which I have been consulted, I have

been generally told that the patient was ailing, losing flesh, health, and spirits, daily; or remaining persistently ill and weak, without any definite or demonstrable cause. In a few the patients have been suspected to be phthisical. It is, however, remarkable that I have yet met with very few cases in which phthisis was present." (p. 141.)

In regard to the exciting cause of the secretion of oxalic acid, Dr. Bird states that they were, in the majority of cases at least, generally well marked; and that in almost all, the predisposing cause was nearly the same; viz., a chronic and persistent derangement of the general health, or the lowering of the system by previous acute disease. The exciting cause has generally consisted in some circumstance, which has determined the irritation to the urinary organs,—such as exposure of the lower part of the spine to cold, mechanical violence over the region of the kidneys, unnatural excitement of the genital organs, &c.; but, in many instances, no other obvious cause existed than great and protracted mental effort. The treatment, in the majority of cases, was very successful; chiefly consisting in minute attention to the general health, and especially to the due performance of the digestive operations, and to the cutaneous secretion. Dr. Bird speaks highly of the effects of colchicum; the use of which increases the normal quantity of uric acid in the urine. In two cases, in which the oxalate of lime existed before its employment, uric acid appeared after a few days as a deposit, and almost entirely replaced the oxalate.

As an appendix to this chapter, Dr. Bird gives seven illustrative cases, selected rather as presenting the chief varieties of ailment connected with the oxalic diathesis, than for the sake of pointing out the treatment. These will be read with much interest; and will doubtless serve to direct more general attention to this important class of disorders. Some interesting researches by Dr. Aldridge, of Dublin, on the products of the decomposition of uric acid, are also added; from which it appears that by simple chemical processes, not only the oxalate and carbonate of ammonia, but also the formic and hydrocyanic acids, may be generated from it. Hence it appears probable that as very slight variations in the temperature, degree of concentration, &c. of the urine, when it is boiled, will affect its products, analogous variations may do the same within the body; and that, under the influence of morbid conditions, hydrocyanic acid and other compounds of cyanogen may thus be produced. Indeed one case is on record, in which hydrocyanic acid was detected in the urine; and there are several, in which ferro-cyanic acid and per-cyanide of iron have been discovered. The development of *known* poisons in the body under the influence of disease, merits the utmost attention, from its great pathological importance; but it would be satisfactory to have the possibility of the production of hydrocyanic acid in the system more clearly established; since Brugnatelli's case just alluded to can scarcely be regarded as alone sufficient for the proof of so important a position; and it would be requisite to watch very closely for the exclusion of all possible sources of error, in regard to the materials of the *ingesta*, before any inferences should be founded upon the appearance of the acid in the urine.

The *chemical pathology of the earthy salts*, forming the subject of the next chapter, is treated of with similar fulness and precision; but our limits forbid our enlarging upon the several interesting questions which the dis-



cussion of this topic involves. The microscopic characters of the earthy phosphates are extremely precise; so that they may be at once recognized (with the exception of phosphate of lime, which is amorphous,) by this kind of examination. Of the circumstances under which these deposits are prone to occur, Dr. Bird gives the following account:

"The occurrence of deposits of the earthy phosphates in the urine must be regarded as of serious importance, always indicating the existence of important functional, and too frequently even of organic, mischief. One general law appears to govern the pathological development of these deposits, viz., that they always exist simultaneously with a depressed state of nervous energy, often general, rarely more local, in its seat. Of the former, the result of wear and tear of body and mind in old people, and of the latter the effects of local injury to the spine, will serve as examples. It is true that, in the majority of these cases, there is much irritability present, there is often an excited pulse, a tongue white on the surface and red at the margin and tip, with a dry, often imperspirable, occasionally hot skin. Still, it is irritability with depression, a kind of erythiasm of the nervous system, if the expression be permitted, like that observed after considerable losses of blood." (p. 176.)

Similar observations, long since made by Dr. Prout, have appeared to us to indicate (when taken in connexion with other phenomena) that the presence of phosphates in the urine, in any unusual amount, is ordinarily due to an excessive *waste* or metamorphosis of nervous tissue, resulting from undue functional activity. It is well known that phosphorus enters into the composition of this tissue, more largely than into that of any other of the soft tissues of the body; and this will, of course, be set free, and will present itself in the excretions, whenever disintegration of the nervous tissue takes place. Now that this disintegration is proportional to the functional activity of the tissue, seems probable, not on general grounds alone, but from various phenomena connected with its nutrition, on which we cannot now stop to dwell. The following case related by Dr. Bird is one of the most satisfactory proofs we have ever met with, of the connexion we have alluded to. It is by him adduced, as one out of many similar illustrations, of the dependence of phosphatic deposits upon the depressed but irritable state of the system, resulting from over-exertion of mind or body. In our view, both are to be referred to a common cause,—the previous *waste* of nervous matter, which will produce the general depression of nervous power that is marked in these cases, as well as the phosphatic deposit in the urine.

"The simplest examples of this kind that have occurred to me have been in the cases of individuals of nervous temperament, who have periodical duties to perform, requiring extreme mental tension and bodily exertion. I have witnessed this state of things several times in clergymen, especially in those who, from the nature of their secular engagements, have been compelled to lead sedentary lives during the week, and to perform full duties on Sundays. The best illustration of this I ever met with, was in the person of a well-known and deservedly popular clergyman; who, from his connexion with a public school, scarcely used any exercise during the week, whilst on Sunday he performed duty thrice in his church. This gentleman was a tall thin person, of dark complexion, lustrous eyes, and almost phthisical aspect. He was the subject of constant dyspepsia. The urine passed on Saturday evening, as well as on the Sunday morning, although repeatedly examined, was healthy, except in depositing crystals of urate of ammonia, and being of a high specific gravity. Before his Sunday duties were completed,

he almost invariably became the subject of extreme fatigue, with a painful aching sensation across the loins, in addition to the flatulence and epigastric uneasiness under which he always laboured. The urine voided before retiring to rest after the severe exertions of the day, was almost constantly of a deep amber hue, high specific gravity, and deposited the triple phosphate in abundance. The urine of Monday would contain less of this salt, which generally disappeared on the following day, and once more reappeared on the following Sunday evening. I had an opportunity of observing this state of things for several weeks; and it ultimately disappeared by the patient relaxing from his duties, and enjoying the amusement of travelling for a few weeks." (p. 179.)

The view we have taken of the immediate cause of the deposition of the phosphates, is borne out by the statement of Dr. Prout, which is fully confirmed by Dr. Bird, as to the great value of narcotics in the treatment of this diathesis. When, in consequence of over-exertion, or undue irritability of the nervous system, its *waste* is too rapid, and there is need of the restoration of its powers by the quiet exercise of the nutritive process, there can be nothing so favorable to this recovery as the administration of narcotics, which keep down its functional activity.

Our assigned limits prevent us from following Dr. Bird through the remaining portion of his account of urinary deposits; in which the less frequent appearances are noticed, and the mode of determining their characters described. We may stop, however, to remark, that Dr. Bird continues well satisfied of the accuracy of what he formerly published on the subject of *kiestein*, the peculiar ingredient which appears to be pretty constantly present in the urine of pregnant women. The greasy aspect of the pellicle formed by this substance seems due not so much to the presence of fat, as to the glistening of numerous crystals of triple phosphate. He admits, however, that some fat is present; the experiments of Lehmann having proved its existence. It is further interesting, that this fatty matter closely resembles butter, and is convertible into butyric acid. Dr. Bird gives two interesting cases, in which the caseous pellicle was formed on the urine of women almost immediately on their ceasing to suckle,—one of these individuals being pregnant, and the other not. These facts seem to give strong corroboration to the belief, that the urinary excretion furnishes the means of getting rid of the materials of the mammary secretion, which are in preparation *before* they are wanted, and which remain *after* the call for them has ceased. Whether these materials are being prepared in the blood, and are separated by the kidneys when the mammary gland does not act, or whether they are first separated (as Dr. Bird seems to suppose) by the mammary gland, and are then reabsorbed to be eliminated by the kidneys, is a question which we have as yet no means of determining.

We shall close our review of this valuable work with a brief notice of its last chapter, entitled "Remarks on the Therapeutical Employment of Remedies influencing the functions of the Kidneys;" in which an attempt is made to account in some degree for the capricious action of these remedies, and to lay down rules for the better guidance of the practitioner in administering them. Adopting the view, which is we believe the one best in accordance with sound physiology,—that soluble substances find their way into the circulating system, not through the lacteals, but *directly* by means of the blood-vessels of the villi,—he lays great stress on the mode in which salines

should be administered ; adopting Liebig's view, that when a saline solution of *lower* specific gravity than the blood is introduced into the stomach, it will be absorbed by endosmose, and will produce diuresis ; whilst the ingestion of a *strong* solution will cause an exosmose of the fluid parts of the blood into the intestines, and will produce watery purging. Hence Dr. Bird lays down the following rule : " 1. Whenever it is desirable to impregnate the urine with a salt, or to excite diuresis by a saline combination, it must be exhibited in solution, so diluted as to contain less than five per cent. of the remedy, or not more than about 25 grains in an ordinary draught. The absorption of the drug into the capillaries will be ensured by a copious draught of water or any diluent, immediately afterwards." Again, the absorption of salines will be impeded by any cause which produces congestion of the mesenteric veins ; and if that cause be obstruction in the portal circulation, there will be not only deficient absorption, but a retardation of the action of what has found its way in, upon the kidneys. Hence, " 2. When the urine contains purpurine, or other evidence of portal obstruction exists, the diuretics or other remedies employed should be preceded or accompanied by the administration of mild mercurials,—taraxacum, hydrochlorate of ammonia, or other cholitic remedies. By these means, or by local depletion, the portal vessels will be unloaded, and a free passage obtained to the general circulation. 3. In cases of valvular or other obstructions existing in the heart and large vessels, it is next to useless to endeavour to excite diuretic action, or to appeal to the kidneys by remedies intended to be excreted by them. The best diuretics here will be found in whatever tends to diminish the congested state of the vascular system, and to moderate the action of the heart ; as digitalis, colchicum, and other sedatives, with mild mercurials." (p. 293.) In the justice of these views we fully coincide ; and we doubt not that by careful attention to them the practitioner will find many of his difficulties diminished, if not altogether removed. Indeed we believe we might say, that the rules in question are nothing but the expression of the most satisfactory experience on the subject ; but when their *rationale* is determined, they lose their merely *empirical* character, and attain the rank of *scientific principles*, whose application is, in judicious hands, far more extensive and certain.

In conclusion, we take leave of Dr. Bird's work, as we began, with a strong recommendation to our readers to possess themselves of it, and to make themselves practically acquainted with its contents ; satisfied that they cannot do so, without benefit to themselves and their patients. And we trust that Dr. Bird will persevere in the line of research which he has chosen ; since we are confident that he is peculiarly fitted to elucidate its difficulties, and to extend those applications of science to practice, in which the present time is peculiarly fertile.

## ART. V.

*Zur Analysis und Synthesis der pseudo-plastischen Prozesse im Allgemeinen und einiger im Besonderen.* VON DR. GUSTAV ZIMMERMANN.—Berlin.

*Contributions to the Analysis and Synthesis of Pseudo-plastic Processes.*

By Dr. G. ZIMMERMANN, Assistant-Surgeon in the Prussian Army.—Berlin, 1844. 8vo, pp. 356.

THESE analytical contributions to the pathology of the blood and of inflammation exhibit considerable research and industry on the part of the author, and are of importance and interest, as our readers will see.

The author first lays down a theory; he then details cases of thoracic or ophthalmic inflammation investigated with reference to the theory; and next explains the application of the facts observed in the theory detailed. Our principal object will be to record the facts, leaving their theoretical and practical application to our readers. It is but right, however, to introduce Dr. Zimmermann's facts by a short exposition of his views.

There are two modes in which elementary bodies combine, the chemical and the organic; and these two modes divide the transformations of matter which result from their combinations with each other into two distinct classes. The chemical transformations are regulated by a stoichiometric law (stoicheion, elementum,) or law of atomic combination, the atoms uniting in the proportion of one to one, two to two, &c.

The organic transformations are not regulated by this law, and the atoms of organic bodies do not unite according to a fixed ratio. The arrangements of their atoms must be very different from that in inorganic bodies, since urea presents characteristics differing altogether from cyanate of ammonia although the two bodies are identical in atomic composition.

Proteine is the representative and basis of animal compounds, as albumen, fibrine, &c. Caloric, oxygen, and water are the means whereby the chemical mutations in proteine are commenced and carried on. The oxygen of the atmosphere is the representative of putrefaction; it reduces the organic to the inorganic.

Whilst we recognize a power of organic affinity in each atom of organic matter, we recognize also a vital power in each congeries of organic atoms, brought together and arranged after a certain form and a definite idea, and for a distinct object. The atoms thus united into a whole constitute a cell, and the cell, as a whole, combines with each other the atoms of which it is composed. In this respect is its difference from proteine compounds in which the mutual action is between the atoms themselves. Together with the vital composition and recombination of the atoms there is a change in the cell itself; the weaker the affinities are between the former, the weaker is the vital power in the latter, by which its constituent atoms are united.

Such of our readers as have made themselves acquainted with the views of Schultz will now know where they are. Every cell is a microcosm: it has a beginning, a continuation, a decline; during its course it takes up new atoms and casts off effete, until its course is ended. Cell-life, however, is not an independent life; a combination of cells after a definite idea and with a distinct object constitutes a tissue. Here union is force; united they perform higher and more important functions. Still, however,

each cell has its individual life; it is born, grows, ripens, becomes old, disappears, and in the place of the cell gone, a new cell comes, to run through the same cycle. A union of several tissues constitutes an organ; a union of several organs constitutes an organism, or individual. The united powers of the organism constitute its individual vital power; the whole of its functions constitute its life. So that the vital power of an organism is in proportion to the vital powers of the organs, entering into its composition; the vital powers of the organs depend upon those of the tissues, those of the tissues depend upon those of the cells, and those of the cells depend upon the force of affinities of the organic atoms entering into their composition. Our readers may go to the last step if they please, and say that the force of these latter depend on the energy of the organic force, but for the purposes of the theory we had better stop at the cells.

To get then at the root of the matter, and know clearly the origin of morbid processes, we must know the course of cell-life. We must examine the mode of their progression or development, and of their regression or decline; and we must learn how external injurious agencies (*schädlichen potenzen*,) act on them, and so change a healthy vital process of the organism into a morbid. In short we must ascertain the bio-chemical relations of their constituent atoms.

*The normal progressive metamorphosis of the cells.* The chyle, the product of organized matter, is the source of nutriment to the cells. Its two principal constituents are fat and albumen. The granules of the lymph are formed out of the fat, and their containing vesicles out of the albumen, (Vide British and Foreign Medical Review, vol. XVI, p. 212,) but which gradually change after their formation into casein or globulin. Having in the article on the doctrines of Schultz (to which we have just referred) set very clearly forth the life and adventures of these vesicles, we need not here repeat our story. It will be sufficient to say that being cells themselves they carry oxygen to the cells of the tissues, where it unites with carbon, forming carbonic acid, with which being laden they return to the lungs, there to give it out and take in a fresh cargo of oxygen. They are gasiferous cells, but not cibiferous. What then is the nutritious material in the blood? The albuminate of soda. Each tissue abstracts electively the albumen to form its new cells, but in forming the new cells a new arrangement of its atoms takes place, it is transformed, and is no longer albumen. Each tissue has in itself the power to appropriate the albumen to itself by a special transformation; thus muscle forms it into muscle, nerve into nerve, &c. It is generally held by physiologists that the fibrine of the blood is the source of the new matter deposited in the tissues, and it is in holding a contrary opinion that Dr. Zimmermann's theory essentially differs from others. According to his views, the fibrin is the product of the regressive metamorphosis of the cells, and that therefore it is a purely excrementitial product. His proofs are the following: There is no fibrine in chyme, and very little in the chyle, and, what is remarkable, much less in the chyle of carnivorous animals than in herbivorous, as horses and sheep. Neither by nutriment of the most varied quality nor by hunger is the small quantity in the chyle of horses diminished, but on the contrary, rather increased, if we can rely on the experiments of Tiedemann and Gmelin, who concluded that the fibrine must get into

the chyle through the lymphatics. Since, then, there is no fibrine in the chyme off carnivorous animals, while it constitutes so large a portion of their food, the object of digestion must be the transformation of fibrine into albumen. The younger the animal eaten, the more facile the digestion of its fibre, because the nearer the latter approaches in composition to albumen. Further, the blood of carnivoræ contains less of fibrine than the blood of herbivoræ. The lymph, as Dr. Zimmermann shows, is loaded with fibrine, which would not be the case if fibrine were the nutritive constituent of the blood. Another proof quoted by him is the result of the experiments instituted by Magendie, Nasse, and others, who, having transfused blood deprived of its fibrine into an animal, found that after being circulated awhile it contained fibrine and was coagulable; a fact not to be explained by the opinions of Schultz, Simon, and others, as to the origin of fibrine. Dr. Zimmermann further argues, that venous blood contains more fibrine than arterial, although he acknowledges that in this point further experiments are required.

These are the principal proofs brought forward by the author in support of his doctrine. It is true he enters into details we have not noticed, to show that other opinions as to the origin and use of the fibrinous constituent of the blood are wrong: but granting this, it is no proof he is right. In a subsequent section it will be seen our author assumes fibrine to be an excrementitious product of the muscles.

*The normal regressive metamorphosis of the cells.* In every moment of life, in every movement whether voluntary or involuntary, in every act of every organ, in every sensation, idea, or perception, there is necessarily a change in the relations of the organic atoms constituting the basic cells of the organism. The latter are capable of performing their proper functions so long as these changes do not induce such chemical transformations as to destroy the vital force which unites their atoms; but when this metamorphosis is perfected, the effete cells must be excreted and give place to others, otherwise a morbid state of the organ is set up. The oxygen taken up by the blood-vesicles, and brought through the capillaries to the basic cells, is the principal agent in effecting these changes. Fibrine is the product of the regressive metamorphosis of the muscles, and uniting with oxygen forms the normal products excreted by the skin and kidneys. Increased muscular action increases the quantity of fibrine in the blood, and of lactic acid in the urine, while Dr. Zimmermann engages to produce pathological observations in proof that the fibrine in the blood is resolved into inorganic products, as urea, &c. He argues that the experiments of Prevost and Dumas, who having extirpated the kidneys of animals found urea in the blood, to prove that the formation of this and the other urinary constituents is not due to the action of the kidneys themselves, but rather that they are merely the emunctories through which substances already formed during vital processes are eliminated from the circulation. Previously to giving his own theory in this matter, our author combats those of Prevost and Dumas, Tiedemann and Gmelin, Müller, Simon, Berzelius, and Schultz, and shows that they must all be wrong, and then by special pleading shows that he is right. Adopting Liebig's views as to the relations of the compounds of proteine to oxygen, he illustrates his scheme of the metamorphosis of fibrine by the following:



The specific gravity of the serum varied from 1027 to 1036, and 1000 grains contained from 96 to 112 grains of solid matter. It was of a rather thick consistence, sometimes greenish, sometimes yellow, the clot appearing through it of a violet colour, and in only three cases was there a buffy coat. A general recapitulation of all the observed cases of this kind is given, and an account of his own analysis, from which we gather nothing satisfactory. Next comes a paper on the existence of fibrinous serum; and another on milky serum with reference to the milk-secretion of wet nurses and pregnant females, both of which being polemical, we pass them over to notice his remarks.

*On coagulable urine.* The discovery by Dr. Bright has led to numerous researches on the constitution of the urinary secretion with special reference to the presence of albumen. It has been observed in the urine of persons suffering from widely different diseases, as scarlatina, and the dropsy following thereon, meningitis, bronchitis, pneumonia, peritonitis, diabetes, diseases of the spinal cord, of the heart; and has even been observed in persons having no manifest disease whatever.

Fibrine is, however, sometimes present in the urine. Brandis found that of a person affected with scarlet fever to coagulate on cooling. Nasse knew a catholic priest who passed, particularly during the night, a large quantity of whitish urine that coagulated spontaneously in from ten to fifteen minutes after leaving the bladder, and often indeed coagulated in the bladder itself. The patient experienced no debility. On analysis, the urine was found to contain a large quantity of fibrine, but no blood-globules. There were also prismatic crystals in the urine which were found to be triple phosphates.

Dr. Zimmermann has had patients whose urine coagulated by heat, but on applying the proper tests it was found to contain another compound of proteine than albumen. He thus describes the urine in which he detected fibrine. From patients with inflammatory affections it was saturated, acid, and urinous in smell; in other cases it was pale, cloudy, of a faint sweetish smell, and nearly or altogether alkaline. Sometimes it contained, besides fibrine, amorphous urate of ammonia or uric acid. Dr. Zimmermann observed fibrinous urine in endocarditis, pleuritis, pneumonia, inflammatory catarrh, rheumatic ophthalmia, periostitis of the occiput, and erysipelas of the face. In five of these cases, two being rheumatic ophthalmia, and three thoracic inflammation, the blood contained molecular fibrine. In these cases Dr. Zimmermann observes that the kidneys were quite healthy. The fibrine appeared in the urine simply as an excretion, sufficient oxygen not having been taken up to decompose it into its organic forms. Our author thinks that in many cases of coagulable urine, the coagulation will be found to be due to the presence of fibrine quite as often as of albumen. It will be found probably in cases where the cutaneous function is suppressed, as happened in the examples he analysed, and also be accompanied with fibrinous serum.

*On the action of the salts which dissolve fibrine.* We pass over two sections on the urinary salts to this subject, Dr. Zimmermann having been induced to direct his attention to it by the peculiar doctrine he holds as to the origin of the fibrine and of the pseudo-plasma, or *materia peccans*. The salts having this property are the carbonate, borate, and phosphate of



soda, and the nitrate, sulphate, acetate, and hydriodate of potass. Their action on the fibrine is not purely chemical, as they cause no change when brought into relations with that compound. The salts may be seen under the microscope to separate unchanged. They exercise a contractile influence on the capillaries, and also on the blood-vesicles themselves, deepening their colour, and exciting the secretion of carbonic acid, plainly in consequence of a more active oxydation of the organic ferruginous compound the vesicles contain. All these salts act on the whole mass of the blood into which they are absorbed. Dr. Zimmermann had a striking proof of this. He gave two drachms of nitre daily for seven successive days, to a soldier labouring under arteritis, and having occasion to bleed him on the seventh, examined the serum. It presented a bluish white appearance, and deposited on the inner surface of the stone-jug in which it was contained such a quantity of the salt, that it might have been collected by a scruple at a time. The atrophy which the continued use of these salts induces proves that, while they promote the regressive, they interrupt the progressive metamorphosis of the tissues.

*The condition of the blood and urinary secretion in thoracic inflammation.* We pass over some researches instituted to determine the proportion of the various constituents of the blood, and a critique on the method of analysis practised by Andral and Gavarret. Dr. Zimmermann details his own method which is as follows.

*How to conduct a pathological analysis of the blood.* 1. A glass containing exactly 1000 grains of water is filled with blood directly from the vein; a glass stopper fitting hermetically is then inserted, (care being taken to remove all bubbles,) and the specific gravity of the blood ascertained. By continually shaking it the blood is kept fluid; it is then poured into a porcelain vessel, and evaporated, care being taken to wash the glass out with distilled water, and add the latter to the other. The quantity of solid residue is reduced to the proportions in 1000 grains of blood. 2. A glass two and a half ounce measure is filled with the blood immediately after the preceding, covered, and set aside for eighteen hours. The clot is then carefully separated from the serum, and the weight of both ascertained. 3. The clot is now to be pressed through a linen cloth four inches square, and first the fibrine, then the fluid cruor collected. Each is thoroughly washed, freed from moisture, and weighed; they are then carefully dried and again weighed. The results are to be reduced to the proportion in 1000 grains of blood. 4. The serum and clot are to be placed in a glass containing 360 grains of distilled water, and their specific gravity noted, then 250 grains of each at the same temperature, are to be dried so long as they lose weight; the weight of the residuum is then to be reduced to the proportion in 1000 grains. There is a loss of weight by pressure through the linen, but as this will happen in the same proportion in all instances the general results are correct.

Dr. Zimmermann observes that this method will be more suitable to the practical physician than Andral and Gavarret's, because of its greater simplicity and easier performance, while the results are quite as correct as by the latter method.

*Condition of the blood in pneumonia and pleuritis.* Dr. Zimmermann details four cases in which he made a daily examination of the urine, and

also examined the blood after the method described when it was necessary to practise venesection. The fourth case (pneumonia) was complicated with enteritis, and is worthy of notice from this circumstance, that although he learnt by the stethoscope that the left lung was almost completely hepatised at an early period, there was neither cough, pain, nor any rational sign of thoracic disease until the seventh day. The patient died on the ninth, and the autopsy showed the stethoscopic diagnosis to have been correct. A very elaborate analysis and comparison of the various phenomena observed, and especially the mutations in the urine is given, and also a less elaborate statement of the condition of the blood in seven other cases of pneumonia and pleuritis.

In six cases in which the blood had the buffy coat, ten bleedings were practised. In six other cases, there was no buffy coat, and eight bleedings were practised. The following is the summary of each, and the general average of the whole. The quantity of blood examined in each case was 1000 grains.

*Blood presenting the buffy coat.*

The whole blood.	Serum.	Clot.
Specific gravity . . . 1049.8	1027.5	1079.4
Solid contents . . . 903.3	93.3	286.0
Water . . . 796.7	906.7	714.0

Moist fibrine, 20.6 grs.; dry fibrine, 6.1 grs.; proportion of clot to serum, 1.84 to 1.

*Blood not presenting the buffy coat.*

The blood generally.	Serum.	Clot.
Specific gravity . . . 1050.8	1027.5	1084.5
Solid contents . . . 905.	93.6	299.3
Water . . . 795.	906.4	700.7

Moist fibrine, 11.6 grs.; dry fibrine, 3.58 grs.; proportion of clot to serum, 1.76 to 1.

The twelve cases estimated according to the method of Andral and Gavarret gave the following results:

	Water.	Residuum.	Fibrine.	Blood-vesicles.	Residuum of serum.
The mean of the twelve .	796.2	903.9	4.75	119.1	80.85
Mean of Andral and Gavarret's analyses (36 cases)	790.	901.	7.3	114.1	81.0

Simon of Berlin analysed the blood of two healthy persons, and of four suffering from pneumonia with the following mean results; his method differing from both the preceding.

	Water.	Residuum.	Fibrine.	Fat.	Albumen.	Globulin.	Hæmatine.	Salts, &c.
Healthy blood .	795.27	904.72	2.10	2.84	76.60	103.02	0.209	12.06
Blood in pneumonia	810.73	189.26	6.06	2.84	106.12	59.13	2.53	10.01

The difference between the healthy and diseased blood can be readily estimated by our readers.

*Theory of inflammatory blood.* Dr. Zimmermann proceeds to theorize on his facts and to apply the variations in the constituent elements of the blood to the explanation of thoracic inflammation. These affections are most frequent in winter with a north or north-west wind, when the temperature is low, and the weather fine and dry. From the absence of moisture, and of the gases contained in the air during the heats of summer, more oxygen

is taken into the lungs at each inspiration. The consequence is a more rapid evolution of the blood-vesicles and a consequent diminution in their number. Further, the congestion of the lungs in inflammation and the depletion practised remedially will diminish their relative proportion. They also exhibit a peculiar facility of uniting and adhering to each other in inflammatory blood, such as is not observed in the normal condition. This characteristic appears to depend on certain transparent irregular masses of matter attached to the margins of the vesicles, and in which some granules are to be detected. The saline constituents are diminished, and the albuminate of soda increased, the increase of the latter being dependent, according to Dr. Zimmermann, on the increased quantity of food taken in winter to maintain the animal heat, and the consequent reaction of the oxygen in the organic atoms thus introduced to keep up the metamorphosis of the tissues. The skin being subject to a lower temperature in winter, its excreting functions are less active, and less decomposed fibrine is thrown off through this emunctory. In ordinary circumstances, the kidneys supply the deficiency, but when an individual has taken cold, which usually occurs when heated after exercise, and when there is necessarily an unusual quantity of fibrine in the blood, that substance being the moult or product of the regressive metamorphosis of the muscular fibre, then the functions of the skin are altogether abolished, and the kidneys being unequal to the additional duty imposed on them, the fibrine accumulates, and loading the capillaries gives rise to congestion of the lungs. This congestion by diminishing the supply of oxygen still further aggravates the original disease, and thus the pseudo-plasma is formed in the lungs, or if not in them in the *locus minoris resistentiæ*.

*Explanation of the changes in the physical characters of inflammatory blood.* Inflammatory, and particularly buffy blood, is thinner, brighter coloured, and produces more foam as it flows into the vessel, than normal blood. The fluidity is dependent on the greater amount of fibrin and serum it contains. The albumen and fibrin both take up a larger quantity of water to hold them in solution. The brighter colour depends on the higher degree of oxydation attained by the hematine. The causes of the slower coagulation of buffy blood are,—1, the increase in the quantity of fibrin; 2, the diminution of the number of blood-vesicles, and their tendency to adhere to each other; 3, some peculiar vital properties of the fibrin itself. The blood-vesicles, Dr. Zimmermann thinks, act as points of crystallization, just as a straw thrown into freezing water accelerates the formation of ice. The same causes which retard the coagulation of the blood, facilitate the formation of the buffy coat. These same causes also operate in the formation of the buffy coat, and cause a difference in the specific gravity of different portions of the clot. In coagulated healthy blood, the lowest portion is the heaviest, the heavier vesicles sinking to the bottom. Dr. Zimmermann instituted inquiries on this point with the following results. In 1000 grains of the upper portion, there were 320 grains solid contents, the specific gravity being 1090; in 1000 grains of the lower, 368 grains solid contents, and specific gravity 1104. With this tendency of the blood-vesicles to sink, there is an opposite tendency of the fibrine to rise, and thus form the buffy layer or coat.

In 1000 grains of the upper and under portions of various specimens of blood examined, the proportions of fibrine was found as follows:

	Fibrine in Upper portion.	Fibrine in Under portion.
Blood of a healthy person . . . . .	7.3 grs.	2.7
In a case of congestion of the head . . . . .	6.8 ..	2.3
bilious pleurisy . . . . .	9.2 ..	3.5
pneumonia . . . . .	14.6 ..	3.3
nephritis . . . . .	13.7 ..	6.3

But although the formation of the buffy coat proves the existence of an abnormal quantity of fibrine in the blood, it is not diagnostic of pneumonia. On the other hand, the absence of the buff is no proof that the fibrine is not in excess. It has been already shown that in twelve cases of thoracic inflammation, the buffy coat was observed in six only. The reasons why this is so, are adduced by Dr. Zimmermann as follows. It depends firstly, on the amount of blood-vesicles in the blood previously to the attack of inflammation; secondly, on the quantity of accumulated fibrine; and thirdly, on the extent to which the effusion of plasma consequent on the congestion takes place, and on the number of blood-vesicles accumulated in the capillaries. If the buffy coat is not formed at the first bleeding, it often is at the second, especially in those cases in which the inflammation is peracute, and the skin dry. The increase of the fibrine consequent on the interruption of the cutaneous and pulmonary functions, the using up of the blood-vesicles, and the greater fluidity of the plasma facilitate the formation of the buffy coat. It often happens that when the blood at the same venesection is received into successive vessels, a buffy coat forms in some and not in others, but most frequently the latter predominates, as for example, when from ten to twelve ounces are received into four or five cups. The reason of this is not evident, nor are there any circumstances in Dr. Zimmermann's experience that elucidate this point. He does not find the pulse to be a guide. In pneumonia, where a buffy coat was formed at the first bleeding, he has found the pulse quick, frequent, soft, and intermittent; in erysipelas, where also this coat was seen, the pulse was strong, frequent, round, and normal. On the contrary, in pleuritis, with a quick, rather round and hard pulse, no buffy coat was found.

*Pathology of thoracic inflammation.* Dr. Zimmermann devotes several pages to a discussion of this subject, and applies the theory of the formation of pseudo-plasma already detailed to its elucidation. Amongst the predisposing causes, he considers first the condition of the blood itself as it is observed in those predisposed, namely, an excessive richness of the blood, and great vital activity in the primary cells of the tissue, or in other words, a plethoric condition. Amongst the exciting causes, is the interruption by cold of the action of those organs whose function it is to excrete the rapidly accumulating fibrine namely, the skin and kidneys, and which facilitates the formation of the materia peccans of the humorists, or the pseudo-plasma as he prefers to call it. The lungs are constituted the *locus minoris resistentiæ* because of the greater activity of their tissues in youth, the age at which inflammation of their parenchyma or serous coverings most frequently occurs. Further, the transformation of the atoms constituting fibrine being prevented by the interruption of the cutaneous function, the access of oxygen being there barred, the lungs take up a vicarious action, and so become the seat of the pseudo-plasma. The first action of this on the pulmonary capillaries is that of an irritant, causing their contraction. Reaction is then set up; the circulating fluid presses forward; the capilla-

ries are dilated, then congested, and ultimately effusion of the pseudo-plasma into the surrounding parenchyma takes place; or where the capillaries give way to the pressure from behind, blood itself is effused. With this effusion the proper phenomena of inflammation cease, and a new vital action directed to the effused fluid is set up, constituting the completion of the first crisis of the disease. These crises have a three and a half day type (a lunar week), the normal course of a pneumonia or pleuritis occupying eight lunar weeks or twenty-eight days. In fourteen days, the series of morbid changes arrive at their climax; they then begin to decline, and in fourteen more are ended. He has observed a similar periodicity in erysipelas, and thinks the cause is to be sought for in the metamorphosis of the pseudo-plasma and of the cells in the blood and nervous system. We cannot follow our author through his explanation of the pain, cough, dyspnea, headache, increased frequency of the circulation and respiration, and the other symptoms of thoracic inflammation; to all these he applies his own doctrines, or those generally received with great ingenuity. With equal ingenuity he discusses the operation of the remedies usually found most successful in treatment, and giving their biochemical and physiological action with great minuteness. Bleeding, with nitrate of potass and tartar emetic, or the two latter without bleeding, and also acetate of lead and opium, are the principal remedies whose *modus operandi* he discusses as being been found empirically to be the most successful. We shall notice some leading points in his therapeutics.

*Modus operandi of bleeding in thoracic inflammation.* This is most distinctly indicated in plethoric subjects, and its curative operation consists in the vacuum it causes in the vascular system; so soon as a vein is opened, the flow of the capillaries is rendered stronger while that in the larger veins is interrupted. This stronger flow from the venous capillaries is communicated to the arterial capillaries, and hence the vacuum is first felt in the arterial system. The left ventricle is thus enabled to receive, or rather suck in, more blood from the lungs through the pulmonary veins, and so the pulmonary capillaries are relieved from congestion. Further, the right ventricle can now transmit to the lungs the blood sent to it from the right auricle, and the vena cava, the root of the venous capillaries pours its blood more freely into the right auricle, and then the suction power of the heart augmented by the vacuum increases and is communicated to the whole capillary system of the organism. This ingenious explanation, Dr. Zimmermann argues, is supported by the mode in which the blood flows from the punctured vein, as first, the blood is forcibly projected because of the quantity collected below the bandage; then it flows with less impetus, and at last appears as if it would cease altogether, but after a while it is projected more forcibly, and when a few ounces have been taken, the impetus is so great as to render it not always an easy matter to stop it. This chain of phenomena is most observable in sanguineous apoplexy, and whenever it happens it is to be considered a good sign.

Fainting occurs at two stages of bleeding: the first, when only two or three ounces of blood have been taken; the second when the quantity amounts to twelve or eighteen ounces. Fainting in the first stage depends upon the action of the vacuum upon the left ventricle of the heart, and is a bad symptom, because it shows that the haustive power has not extended

to the pulmonary veins and capillaries, and that the congestion there is permanent. Fainting in the second stage depends on anemia of the brain consequent on the depletion, and is a favorable symptom.

The re-establishment of the circulation in the pulmonary capillaries consequent on the vacuum caused by the abstraction of blood is followed by a restoration to healthy functions of the pulmonary tissue. The nerves act again normally: the air-cells relieved from pressure, become again permeable, and the ingress of oxygen to the blood is facilitated, while the pseudo-plasma is reabsorbed, provided it be recently effused, and have not undergone transformation. The albuminate of soda, which by its quality was a predisposing cause of inflammatory congestion, unless it have undergone change is still fit to carry on the progressive metamorphosis of the tissue; and if unfit, is acted on by the oxygen absorbed, and is thrown off through the kidneys and skin as an excretion. We need not discuss the *modus operandi* of topical depletion as the preceding views illustrate it sufficiently.

*The modus operandi of nitre in thoracic inflammation.* If, however, the congestion of the lungs is not recent, if effusion have taken place with morbid changes in the blood, in the capillaries, and in the organs themselves, bleeding is of secondary value, and other remedies must be adopted. Nitre and tartar emetic are the most generally and successfully adopted in Germany. The results of experiments show that the action of nitre on blood out of the body is to prevent its coagulation, to diminish the tendency of the blood-vesicles to unite, and to contract the membrane of the latter. Its chemical relations to fibrine as a solvent has been already stated. When taken into the stomach, it is absorbed into the circulation and excites both the capillaries and blood-vesicles to contract. It hinders the tendency of the fibrine to coagulate, and by rendering the effused plasma more soluble promotes its absorption. It also renders the absorption of oxygen into the blood more active, and so facilitates the decomposition of the pseudo-plasma and its excretion by the kidneys and skin, in the form of urate of ammonia, &c.

*Modus operandi of tartar emetic in thoracic inflammation.* Dr. Zimmermann instituted an experimental inquiry into the comportment of tartar emetic towards the blood when out of the body, and found that two grains added to one thousand of blood rendered the coagulation imperfect; and six grains caused the blood of a patient having the buffy coat to coagulate into a jelly-like mass, without any buff. Unlike nitre, it rendered the fibrine less disposed to decompose, and seemed to form with it rather an insoluble chemical compound. Unlike nitre also in its action on the blood-vesicles, it rendered them less contractile, and which examined under the microscope appeared large and expanded, the membrane being relaxed, and permitting the colouring matter to permeate it. Its *modus operandi* is therefore opposite to that of nitrate of potass, yet Dr. Zimmermann hesitates not to recommend them in combination. He is of opinion that the administration of tartar emetic alone without bleeding in extensive pneumonia and pleuritis is dangerous.

*The action of acetate of lead and opium in pneumonia.* Dr. Zimmermann says the great success of this combination (administered without bleeding) has been testified by so many and so high authorities, that there can be

no doubt of its value as a remedy in pneumonia. He thinks the *modus operandi* of lead consists in its exciting action on the living fibre, and in its influence in arresting the progressive metamorphosis. His remarks amount however simply to this, that it is a good empirical remedy, is preferred by many to calomel, antimony, and the lancet, but that its *modus operandi* is unknown. Dr. Zimmermann gives no account of calomel as a remedy, although he administers it freely in practice: this is an important omission.

*Pathology of epidemic ophthalmia.* The remainder of the volume is occupied by a history of several cases of this disease, as it appeared in the garrison at Berlin. In each we have an analysis of the blood, and a daily analysis of the urine; and the whole is concluded by an extended inquiry into the pathology of the affection conducted with the ingenuity and research we have noticed as characteristic of his inquiries into the pathology of thoracic inflammations. We subjoin his summary of the condition of the blood in eight cases.

Specific gravity of blood.	Solid contents.	Water.	Specific gravity of serum.	Solid contents.	Water.	Ratio of clot to serum.	Specific gravity of clot.	Solid contents.	Water.	Moist fibrine in grs.	Dry fibrine in grs.
1053	297	753	1031	104.7	886.3	1.34 to 1	1057.2	319	781	6.4	2.25

The preceding results were obtained by his own method; the following by that of Andral and Gavarret. We would observe, however, that they are not the result of observation, but of calculation according to a formula laid down by Dr. Zimmermann, if we understand him rightly.

Fixed residuum.	Water.	Fibrine.	Blood-vesicles.	Serum.	Fixed residuum of serum.
207	733	2.25	111.5	884.3	39.25

On a general review of our author we have to observe that his inquiries are a favorable example of the new researches in pathology to which the recent discoveries in organic chemistry must necessarily lead the physician. We think, however, that it would have been in better taste if more reference had been made to the views of Liebig. At least, Dr. Zimmermann should not have quoted the *ipsissima verba* of that chemist, without stating from whom he derived them, or indicating by inverted commas that the sentences were quotations. *Summum cuique* should be the motto, not less of the philosopher than the critic; but Dr. Zimmermann professes, and not without reason, to be both, and his authorship is therefore in this respect not to be approved.

## ART. VI.

*Medico-Chirurgical Transactions, published by the Royal Medical and Chirurgical Society of London, vol. XXVII.—London, 1844. 8vo, pp. 512.*

THE volume recently issued from the halls of Berners street, is the bulkiest of which the annual contributions of the Medico-Chirurgical Society have yet required the production. Bulkiness is not the only quality of the tome; its general merit is remarkable; and though no single paper can be pointed to possessing a very high order of importance, all are more or less distinguished by the light they throw on points of scientific or practical interest. We shall notice them seriatim.

I. *An account of two cases of rupture of the ureter, or pelvis of the kidney, from external violence, followed by large effusion of urine into the abdomen*; by E. Stanley, President. A boy was squeezed between the wheel of a cart and a curb-stone, and brought into St. Bartholomew's Hospital, with severe contusion of the soft parts round the pelvis; the boy suffered from great pain in the lower part of the abdomen, and lay perfectly helpless. Nothing further is stated concerning the immediate consequences of the injury; but it appears that extensive subcutaneous supuration subsequently occurred round the pelvis. By the end of the sixth week, recovery of the injured soft parts had considerably advanced. At this period the writer's attention was directed to a fulness, not before observed, on the right side of the abdomen. On further examination "a circumscribed, oblong swelling was recognized through the abdominal parietes, extending from the base of the chest downwards to within a short distance of Poupart's ligament; anteriorly, it terminated abruptly at the linea alba; posteriorly, it could be traced into the lumbar region, but it here presented no distinct boundary; the liver appeared to be pressed upwards by the swelling. . . . Pressure on the swelling gave no pain, but a deep fluctuation in it could be recognized. The urine passed naturally, *as it had done throughout*, and that there was no distension of the bladder was ascertained by the introduction of a catheter." On puncture with a lancet a little clear yellow fluid escaped, in such manner as to show that it was "situated immediately beneath the abdominal muscles." Three weeks later the swelling grew more tense, and fifty-one ounces of a clear yellow fluid were discharged by puncture with a trochar. The application of leeches became necessary for the relief of pain, after each of the early punctures at least; the swelling was opened six times in all, and the boy discharged nine months after the accident, still exhibiting a swelling on the region mentioned, but one which had then for some time continued without increase or obvious diminution of size. The fluid was found on examination to contain urea, and was alkaline, highly albuminous, inodorous, of saline taste, and specific gravity 1008. It contained, besides urea, chloride of sodium, alkaline carbonates and sulphates, together with the peculiar extractive matter of urine. Mr. Taylor was of opinion that from the absence of mucus from the fluid, the communication with the urinary organs was not free, and was high up, as at the commencement of the



ureter. Mr. Stanley thinks similarly, and appears to suppose (as is justifiable,) that the fluid had formed a cavity for itself by detaching the peritoneum from the abdominal and lumbar muscles.

In the other case, occurring in the practice of Mr. Vincent, death ensued in ten weeks after an injury much like that already described. The fluid had been withdrawn by puncture, but was pronounced by a "high chemical authority," (in one of his unanalytical moments, we presume,) not to be urine. On examination of the body a large cyst was found on the right side of the abdomen, behind the peritoneum, extending upwards to the diaphragm and downwards to the pelvis. A passage existed between the upper part of the cyst and the pelvis of the right kidney.

II. *Account of a case of cysticercus cellulosæ of the brain*; by Drewry Ottley, Esq. An emphysematous woman, aged 40, began to suffer in 1838, from giddiness and dull pain in the head; and had temporary numbness and loss of power in the right hand and arm, confusion of intellect and difficult articulation in July of that year. In 1839 she became subject to fits, with entire loss of consciousness and convulsions of the limbs. The attacks came on and ceased less suddenly than those of epilepsy; the convulsions came on as often as eight or ten times in as many hours, the stupor remaining in the intervals. In October 1840, she expired after frightful convulsions of twenty-four hours' duration. Post-mortem examination disclosed numerous small fibrous cysts in the pia mater of both hemispheres, they were most numerous on the left side. There were none in the white matter, the central ganglia, nor plexus choroides. The cerebral tissue round the cysts appeared natural. Each of the cysts was found occupied by a "vesicular worm, consisting of a posterior semi-transparent vesicle, and an anterior cylindrical portion which lay retracted in the former, like the finger of a glove turned inwards; the latter part was furnished at its extremity with a double circle of hooks, round which were seen four oval suckers." This case is interesting from the tolerably complete account of the symptoms given by the reporter. During the closing year of her life the patient suffered little from her pulmonary disease.

III. *On the cause of the occasional presence of spermatozoa in the fluid drawn from the sac of common hydrocele of the tunica vaginalis*; by J. Dalrymple. In the discussion which followed the reading of one of the papers, descriptive of the presence mentioned, it was suggested that possibly some of the seminiferous tubes had been punctured, in the operation for evacuating the fluid. And that this is not an improbable solution of the difficulty felt in accounting for the presence of these bodies, Mr. J. Dalrymple "attempts to explain."

Spermatozoa, the writer first observes, are of rare occurrence in the fluid of hydrocele, and are not to be confounded with vibriones generated in that fluid, if kept for some hours in a heated state of the atmosphere. It might appear sufficiently absurd to make the avoidance of this error a matter of serious caution, but in these days of microscopic mania, when even quacks appeal to the evidence of the instrument in favour of their charlatanism, the precaution appears to us superlatively wise.

Having, rather by inference than otherwise, (for Mr. Dalrymple appears in nowise covetous of drawing upon his head the wrath of certain embryo

micrologists,\*) disposed of some of the cases of *spermatozoa* found in the contents of the tunica vaginalis, the writer quotes from Scarpa and Le Dran statements regarding the altered position of the cord, the vas deferens and the epididymis in scrotal hernia and hydrocele. We were unprepared to believe that surgeons are so generally unacquainted with these, as Mr. Dalrymple appears to hold; but admitting him to be correct in his notion, we are desirous of giving publicity to the account given of a dissection performed by himself. In a common hydrocele examined after death, and after inflation and drying, the appearances were as follow. "The body of the testicle was situated at the bottom, posterior and somewhat internal part of the cavity; and the vascular cord was seen running along the posterior wall of the sac, and emerging at the upper part, far behind the most prominent part of the swelling. The vas deferens, however, was situated quite external to this, and removed from the vascular cord nearly one inch. At the lower part it approached the testis, made a few of its larger coils, from which commenced the lower head of the epididymis. As the latter body ascended again, it was still further separated, or dissected as it were, lying upon the lateral aspect of the sac, and distant from the body of the testicle, about an inch and a half; it continued to ascend, until it reached to nearly an inch and a quarter above the testis, when the position of parts was as follows: the testis and vascular cord at the most posterior part of the sac; the vas deferens next to it, but distant about half an inch: and lastly, the epididymis still more external and anterior to the vas deferens. At the upper part, the epididymis suddenly crossed the vas deferens, and descended in a curved line towards the body of the testicle, in which it finally merged." The description is illustrated by an engraving; and it appears from this, that the epididymis and vas deferens are placed by no means out of danger of being punctured by the trochar.

IV. *Cases of carcinoma of the thyroid gland*; by Caesar Hawkins, Esq. Mr. Hawkins having enhanced the importance of the cases, he is about to communicate, by reference to the idea of Scarpa that malignant disease of the thyroid gland only took place as a consequence of preceding alteration of adjacent parts, and by quoting the statement of Dr. Walshe, that "unless as a complication of preexisting encysted disease, or other form of bronchocele, cancer of the thyroid gland is singularly rare," proceeds to lay the particulars of those cases before his readers. In the first case, death did not ensue; the case therefore cannot be considered convincing, although several circumstances militate very strongly in favour of the accuracy of Mr. Hawkins's diagnosis. But the following history terminating by the post-mortem examination is particularly valuable.

A man, aged 50, was admitted into St. George's Hospital, having the general aspect of perfect health, with a considerable enlargement of the whole thyroid gland, but particularly of the right lobe. The tumour was smooth, very firm and solid; the skin unattached and unaltered in colour; the superficial veins large. The larynx and trachea were thrown very

\* The bitterness and envious spirit of physiologists have long been proverbial; but the micrological section of those philosophers did fail to acquire a special reputation for amenity of temper altogether beyond the chance of rivalry.

much to the left side; but inspiration was more easily performed than deglutition. The tumour was free from pain or tenderness; and had made its first appearance five weeks before his admission. The man lost flesh; and died about two months after he came under observation; the whole course of the disease was consequently not more than fourteen weeks. Dysphagia appears to have been constant, but sometimes in addition, paroxysmal; vomiting sometimes occurred regularly at a certain period after eating, and at other times took place violently during his meal. The patient suffered much from pain in the epigastrium and hypochondria, and had tenderness over the stomach. He began to vomit some coagula of blood a week or so before death.

The right internal jugular vein, common carotid artery, and pneumogastric nerve were separated from each other by the pressure of the morbid growth. The coats of the vein had in one place been absorbed, and some of the tumour protruded into its anterior. The vagus nerve was flattened and its fibrils separated. The tumour occupied almost the entire of the thyroid gland, and destroyed the anterior wall of the œsophagus, protruding into its interior in the form of a large ulcerated mass; below the cricoid cartilage, a large ulcerated opening led into the trachea. The tumour presented the structure of genuine scirrhus; and there were many small encephaloid tubercles at the base of both lungs, and in the cellular tissue under the costal pleura. The stomach was perfectly healthy.

The epigastric pain and tenderness, the vomiting, and latterly, hæatemesis led Mr. Hawkins into the very excusable error of supposing that the stomach was cancerously diseased. The difficulty of swallowing, and the vomiting are otherwise and readily to be accounted for by the post-mortem appearances in the œsophagus. But how may the epigastric suffering be explained, as the stomach was sound? Plausibly enough, with Mr. Hawkins, by the expanded and flattened state of the vagus nerve.

We are at a loss to determine why Mr. Hawkins considers it justifiable to regard the cancerous growths existing in the thyroid gland in a case published by Velpeau as encephaloid, while the narrator of the case affirms they were scirrhus, and describes certain of the characters peculiar to the latter kind of formation. Mr. Hawkins objects to the alleged statement of Dr. Walshe that cancer of the thyroid gland is generally of the scirrhus species. But (without meaning to give the weight of our opinion to either side,) we may observe that on referring to Dr. Walshe's Essay we find he makes the statement only in reference to cancerous deposition complicating preëxisting disease, and not to cancer in general.

Mr. Hawkins next gives a very brief outline of a case of medullary disease of the gland; here the characters of fungus hæmatodes appear to have been well marked.

As an appendix to this paper appears a case of scirrhus of the thyroid gland by Mr. Brown. The subject of this case was a male, aged 60, who began in December 1842, to suffer from uneasiness about the larynx, slight cough and hoarseness. A hard swelling presented itself in the situation of the left lobe of the thyroid gland, apparently extending internally, and pressing on the œsophagus, as there was great difficulty experienced in swallowing. The integuments in the neighbourhood became thickly stud-

ded with cancerous tubercles. Violent, convulsive, and almost incessant cough, with copious muco-purulent expectoration, streaked with scarlet blood, was one of the most prominent symptoms. The patient died in a state of very considerable emaciation in June 1843.

Numerous hard tubercles were seated in the skin of the throat, chest, and abdomen, composed of the same substance as the main diseased mass which occupied the left lobe of the thyroid gland. This lobe was somewhat enlarged and converted into a mass of carcinomatous structure, white, hard as cartilage, and with some gritty particles dispersed through it.

V. *An account of an Alarming syncope from the admission of air into a vein during an amputation at the shoulder-joint*; by Bransby Cooper, Esq. A woman aged 19, had her arm amputated at the shoulder-joint for malignant disease of the humerus. While the operator was dissecting an enlarged gland from the axilla, he distinctly heard a gurgling noise, like air escaping from a narrow-necked bottle, and at the same instant the patient fell into a state of collapse from which she was fortunately roused, and after an hour's assiduous care, removed from the theatre. Beyond the mere fact of the patient's life being saved, (and the case does not stand alone in this respect,) there is nothing remarkable in these circumstances; they are the ordinary symptoms of entry of air into the veins. But more interesting phenomena are noticed afterwards. While reaction advanced, she "maintained a constant motion of alternate flexion and extension of the right leg, while the left remained perfectly quiescent. She continually complained of pain extending up the right side of the head and neck." When placed in bed she passed her feces and urine involuntarily. This action of the right leg continued for the following six or seven days; on one occasion there were involuntary flexions of the left, which she had not the power of extending. On the twenty-fifth day after the operation, the woman was able to sit up in a chair and take her dinner. She then complained of great numbness and loss of power in the left leg, which she dragged after her; it was as sensitive as the right. On the fortieth day she was discharged from the hospital, having no other unfavorable symptom than some slight dragging of the limb; and about five months after was readmitted with a tumour (of the same kind as the humeral) in the left scapula. After having experienced for a day or two great pain in the lower extremities; they became paralysed, and she suffered at first from inability to void her urine, and afterwards incontinence of this, with torpor of the bowels. She died two months after readmission. A large fungoid mass appeared in the right side of the chest. The tumour of the scapula, "extended to the posterior part of the vertebral column, adhered principally to the second dorsal vertebra, the arch of which was pressed inwards, so as to encroach upon the vertebral canal at that part. The medulla appeared quite healthy, although it must have been slightly compressed by the vertebral arch." The brain and viscera were perfectly healthy.

VI. *Account of a horn developed from the human skin; with observations on the pathology of certain disorders of the sebaceous glands*; by Mr. Erasmus Wilson. In certain cases the sebaceous substance acquires an abnormal degree of density. The substance, accumulated in undue quantity and impacted, exerts much pressure on the walls of the follicle,

an amount of pressure sufficient, in the language of Mr. Wilson, to "abrogate" the special function of that organ. The formation of epithelium, however, still continues, whereby a mass in layers is produced, sometimes of considerable size. The aperture of the follicle remains open, and is more or less distended in proportion to the extent of the tumour; but from the nature of the collection there is no tendency to its escape. The laminated texture and epidermal composition of these collections, constitute their distinctive character; the peculiar materials of sebaceous secretion being absent. If now the upper wall of the laminated collection be removed, and this consequently exposed to the influence of the atmosphere, any retained moisture becomes evaporated, and the mass hardens, in other words is "converted into horn." Fresh layers go on accumulating from below, the indurated mass is forced outwards, increases in size, and will continue to increase for years, unless interfered with by surgical operation. So are produced horns.

Mr. Wilson proceeds to describe a horn removed from the skin of an old woman; and is minute and satisfactory in his description. Persons interested in these *nugæ* of pathology will find the writer's details instructive.

VII. *On the early organization of coagula and mixed fibrinous effusions, under certain conditions of the system*; by John Dalrymple. This subject is not a new one to Mr. Dalrymple; he was the describer some years ago of Mr. Busk's injection of a clot contained between the surface of the tibia and its periosteum. We have examined portions of this clot, and regard the vessels discernible in it, as unquestionably of new formation; the notion that the injected canals were the original vessels between the periosteum and bone, stretched and separated by the clot, is shown by the form, mode of arrangement, and general characters of those canals to be perfectly inadmissible.

But a more important question remains, and one not so readily answerable. This question is whether the newly vascularized substance was simply extravasated blood, or whether in addition to extravasated blood there was present some effused liquor sanguinis or lymph. Under the former circumstances it must be admitted that the blood becomes in proper substance vascularized; and in the latter we have simply proof that the pressure of the colouring matter, &c. of the blood will not prevent lymph, with which it chanced to be associated, from going through the usual changes of advancing development. The case of Messrs. Busk and Dalrymple does not satisfactorily remove this difficulty.

Mr. Dalrymple appears to have, of late at least, felt this. A Lascar died with scurvy on board the Dreadnought; in his knee-joint were found many coagula, some adherent to the reflected synovial membrane surrounding the cartilages of the femur and tibia, and some loose in the cavity of the joint. The limb having been very successfully injected by Mr. Busk, the attached coagula were found to be permeated with new and numerous capillary vessels. Mr. Dalrymple thought this a good opportunity for confirming his previous results, and not content with the mere fact of the clot having been injected, proceeded to a microscopical examination of the morbid parts, before they had been altered by immersion in spirits of wine. The colour

of the masses was found to depend upon red blood-corpuscles in an entire state mingled with fibrinous globules. The firmness of these clots was due to the "advancing organisation of the fibrine itself, the fibrinous cells being found in all stages, from the granulated sphere to the caudate cell, ultimately developing into filamentous tissue." That is, the series from the caudation-corpuscle at one end to the wavy filament at the other, of the progressive steps of this re-formation were observed. But in what manner or mode does the discovery of this cell-development throw light on the question, which we stated was, in the present state of knowledge, unanswered and unanswerable? None in the world. Mr. Dalrymple leaves the matter just as he found it.

There were evidences of advance towards the formation of structure in some of the loose coagula, and at a period when "it is obvious no new vessel could have formed within the mass." This is a point that requires extended observation, adds the writer, and "may have some connexion with the obscure subject of the production of loose cartilages, sometimes found in joints and bursal cavities." It not only may, but must have such connexion, and has already been examined under this point of view by various persons.

"It is not, however, now contended," concludes Mr. Dalrymple, "nor was it in my former paper, that *ordinary extravasations of blood in the healthy body* become organized, because the vitality of the surrounding parts is higher than that of the blood so effused, and the absorbents under such conditions, effect their ordinary changes in consequence of a tendency to disintegration, rather than to an advanced development of the effused blood."

VIII. *A case of extirpation of an ovarian cyst, terminating fatally; by Mr. Bransby Cooper.* A healthy looking woman, aged 32, who had always menstruated irregularly, observed enlargement of the abdomen five years before the operation, one year before marriage: (she had never become pregnant)—the swelling twice disappeared through diuresis; and the woman was besides tapped twice. She had never suffered from symptoms justifying the notion that peritonitis had at any time occurred. Her health being excellent, she appeared an admirable subject for operation. This was performed as follows: "An incision was made below the umbilicus in the median line, between three and four inches in length; and the peritoneal cavity being opened to a small extent, a little ascitic fluid escaped. The finger was introduced and passed around the opening, and a few slight adhesions broken down. An incision was now made through the integuments, commencing three inches below the ensiform cartilage, and extending to the upper part of the first incision, carefully avoiding the umbilicus; and the subcutaneous structures were then divided by a probe-pointed bistoury, cutting from below upwards, the finger being used as a director. The wound was also enlarged towards the pubis." There was very little hemorrhage. A broad and thin pedicle connected with the right ovary soon came into view, which was tied and the mass removed; it weighed thirty-two pounds, it was mainly composed of a single cyst, but there was a small collection of compound cysts in one part. The nature of the mass was consequently the most favorable to success; there were no peritoneal adhesions, the woman was in excellent health;—and she died from peritonitis on the fifth day.

IX. *The Removal of a diseased ovarium, terminating fatally on the seventh day after the operation*; by Mr. Greenhow. This woman was obviously not in so favorable a condition for operation as the subject submitted to the knife by Mr. Bransby Cooper. She "had no symptoms of constitutional disorder," however, when operated upon, "the tongue was clean, the appetite good, the bowels regular, the urine free and natural, and the patient able to sit up three hours in the day; the pulse seventy-six, soft; occasional oedema of the legs had occurred. No pain nor tenderness in any part of the abdomen, except at one point towards the right iliac region, where the original moveable swelling was first felt." The incision made reached from a little below the ensiform cartilage to near the pubis; several adhesions existed in different parts of the tumour. The operation was well borne, but vomiting occurred several times towards the close. The quantity of blood lost did not exceed six ounces. This woman had peritonitis, and died on the seventh day,—death being possibly hastened by disease of the pyloric end of the stomach.

The narrators of these cases of failure deserve the approbation of all honest men.

X. *On the state in which the uric acid exists in the urine*; by H. B. Jones, M.A. Dr. Jones commences the narration of his attempt to cross this *pons asinorum* of ordinary chemists by a most laconic statement of the efforts, in the same direction, of Berzelius, Prout, Simon, and Becquerel. Why those of Donné, Vigla, Quevenne, Guibourt and Rayer should receive no mention at his hands does not very clearly appear.

Dr. Jones next turns to the description of the appearance and properties of the deposit containing uric acid which may be obtained from urine by evaporation under the air-pump. This deposit consists of a most minute globular powder, the particles of which are amorphous, exhibit particular motions, and after solution in water are redeposited on cooling with the same character as before. Any acid changes the powder into angular crystals of uric acid. The entire paper is very creditable to its author; but will scarcely bear analysis.

XI. *A Case of extensive carcinoma of the lungs, with some practical remarks*; by Dr. Burrows. The subject of this case was a female, aged 20, delivered of her first child three months after the first occurrence of pulmonary symptoms, and three months before admission into St. Bartholomew's Hospital. A month before the latter event, she had hemoptysis. On admission the main symptoms were as follow: fulness and oedema of the face, lividity of the lips; respiration 40; pulse 132 (rising to 160 in the sitting position;) pain between the shoulders and at the epigastrium; dyspnea; paroxysms of cough; sputa scanty, intimately blended with blood and of a uniform pink colour, resembling currant juice; lymphatic glands of right side of neck swollen, hard and tender; cervical veins distended; clear exaggerated respiration with increased resonance on percussion audible all over the left lung. On the right side of the chest diminished resonance on percussion in the upper part, perfect dullness below the third rib in front and beneath the spine of the scapula, entirely down to the right hypochondrium; feeble respiration with prolonged expiration in upper part of right lung; similar respiration along

the right side of the spine; bronchial respiration with chirping sounds beneath the mammæ and in the lower axillary region. The weakness of the voice prevented vocal resonance and vibration from furnishing any signs; the heart's sounds were natural and not transmitted beyond the precordial region. Upon these phenomena Dr. Burrows based the diagnosis of malignant disease of the lung, and the following passage contains the reasons for the opinion: "the extreme dulness on percussion, the absence of all vocal phenomena, and the constant decubitus on the right side, seemed to support the supposition of pleuritic effusion. But opposed to this conclusion were the presence of bronchial respiratory murmur in the axilla and hypochondrium, when the dulness on percussion was greatest, and the absence of egophony and of loud bronchial breathing and bronchophony along the right of the spinal column. There were also present physical signs which, when taken together, were inconsistent with consolidation of the right lung, viz., the extreme dulness on percussion, the very feeble bronchial respiratory murmur, the absence of bronchophony or vocal vibrations, and the want of transmission of the heart's sounds to the right of the sternum. Hence the diagnosis of some anomalous disease of the right lung was formed; and when the peculiar aspect of the woman, the distressing dyspnoea and cough, with the singular currant-juice sputa, the enlarged cervical glands and the history of the case, unlike that of pneumonia or pleurisy, were all duly considered, the opinion was hazarded that she was suffering from malignant formations in the right lung." The woman died fifteen days after admission. A cerebriform mass of considerable magnitude projected from the middle lobe of the right lung; towards the root of this was a similar mass, and the middle lobe resembled both in appearance. The superficial parts of the lower lobe were converted into a darkish brown friable substance, studded with white points; portions of the tumour had protruded into the interior of the main right bronchus; the right pleura contained four pints of an olive brown serum; the left pleura and lung exhibited nothing remarkable; the right pulmonary vein was compressed, obliterated, or perforated by the morbid masses.

Dr. Burrows insists on the importance of correct diagnosis in such cases as the present, as a means of preventing the physician attempting too much in the way of treatment, and in fact shortening the patient's existence by the application of remedies fitted only for very different diseases. He then having briefly traced the progress of knowledge on this subject in the writings of Laennec, Andral, Louis, Stokes, and Walshe, proceeds to compare the general symptoms and physical signs manifested in his own case with those described by the best authorities. Having ourselves devoted some considerable space to an article on this subject (April 1843,) for his courteous mention of which we are beholden to Dr. Burrows, we feel it unnecessary to dwell further upon it on the present occasion, especially as the author's remarks, however judicious, are not actually novel.

XII. *An account of certain cases of acute disease in the throat and larynx, one of which was cured by tracheotomy*, follows, from the pen of Dr. J. A. Wilson. Dr. Wilson having seen two persons die thirteen years ago of inflammation, with thickening and purulent infiltration of the neighbourhood of the chordæ vocales, (which inflammation had not extended below



the glottis, and which persons might consequently, he presumes, have been saved by tracheotomy,) found the experience thus acquired extremely useful in the month of July 1843. He was called to a person labouring under symptoms of intense laryngitis, which leeching, calomel, and other active measures were found incapable of controlling. Twenty-four ounces of blood were taken from the arm. Suffocation became imminent, and the trachea was at once divided beneath the thyroid gland. Recovery followed. The case is a most instructive one; and in the tenor of the following remarks we completely concur: "For the operation in this disease, practically, it is never too late; but the chance of its success is greatly lessened by a delay, under which the patient, poisoned by his own blood, loses consciousness, and becomes convulsed. Like the ligature of a bleeding artery, tracheotomy is ruled, without consultation, in all cases where danger is imminent, and within a range of seconds or minutes, might sometimes be justified even after apparent death." The curved trochar, if at hand, is certainly the best instrument for opening the trachea with.

Another case follows, in which the operation was equally called for and equally successful.

*XIII. On the presence of oxalate of lime in the urine; by H. B. Jones, M.A.* The states of the system in which the octohedral crystals, that are considered to be composed of oxalate of lime, present themselves in the urine are exceedingly variable. Dr. Jones has found such crystals appear in acute rheumatism and gout, chronic rheumatism, aggravated hypochondriasis, hysteria, and diabetes. Donn  and Rayer had noticed a connexion between spermatorrhea and the occurrence of these crystals in the urine. Dr. Jones has confirmed their observations.

Dr. Jones feeling desirous of a further demonstration of the nature of these crystals, than that afforded by the microscope, availed himself of the opportunity of chemical examination furnished in a case of rheumatism when the octohedra were exceedingly abundant:

"The urinary sediment was thrown on a filter and washed with distilled water. The red residue was dried, reduced to a fine powder, and treated with dilute hydrochloric acid, which left most of the uric acid undissolved. The acid liquid was filtered, and ammonia gave a very considerable precipitate, when added in excess. When evaporated to dryness, and heated on platinum, the muriate of ammonia was driven off, and the residue effervesced strongly, when thrown into dilute acid, and left an alkaline ash, when heated more highly. The ash was with difficulty soluble in water, and gave a precipitate with oxalate of ammonia. Hence some organic acid salt of lime was present; and as oxalate of lime is known to occur in octohedral crystals, the conclusion that these crystals were oxalate of lime is most probable."

The time at which these octohedra occur in rheumatic urine varies considerably. They frequently exhibit themselves in the acute disease.

An elaborate series of experiments is given, in which the effects of diet and exercise on the deposit were analysed. These must be examined in the original, but it may be as well to state, as among the inferences from them, that while exercise is moderate, the difference of specific gravity of the urine, following the use of animal food only, or of animal food and bread, is very small. When the exercise is increased, the specific gravity is considerably greater than when the diet is purely animal.

During one entire month, the person on whom these experiments were made, took no vegetable substance, except bread, and even this was wholly abstained from for eight days; nevertheless at the end of the month orotate of lime appeared in large quantities.

XIV. *On obstructions of the branches of the pulmonary artery*; by James Paget, Esq. From the arrangement of the pulmonary arteries, between which there is no anastomosis, except in their capillaries and smallest branches, the author points out, as a necessary result, that whenever the flow of blood through any part of these capillaries is prevented, there must be a stagnation of the blood in all the branches from which these capillaries are derived. Under these circumstances, the blood coagulates in the vessels and goes through various changes.

The affections mentioned by Mr. Paget as liable to become complicated with such coagulation of the blood in the pulmonary vessels are pulmonary apoplexy, oedema of the lungs, pneumonia, and cases of medullary cancer or of softened scirrhus, in which the cancerous matter passes into the circulation, and is stopped in the lungs. Cases of the latter description are to be found related many years past; and the explanation of the appearances now given by Mr. Paget has long been the current one. The detection of such clots is not a matter of novelty in pneumonia, having been described by Grisolle and others. But cases where the original affection of the lung has been apoplexy or oedema have not, as far as we know, been hitherto noticed.

Besides this, Mr. Paget gives three cases in which obstruction appears to have occurred as a primary affection, independent of capillary accumulation; in one of them there was disease of the trunk of the pulmonary artery and its valves. These cases will not bear condensation; but we recommend their study in the original. This is a useful essay.

XV. *On the composition of the meconium, and of the vernix caseosa or lubricating matter of the new-born infant*, by Dr. Davy. Meconium exhibits under the microscope a confused mixture of globules, plates, and molecules. The globules are inferred to be mucous; the plates of two kinds, epithelial and cholesteric; the molecules fatty. A soluble material connected with these ingredients seems identical with the colouring and sapid matter of the bile.

The vernix caseosa is composed of tessellated epithelium and fat molecules.

M. Raspail taught that a portion of the meconium consists of intestinal villi; Dr. Davy has sought in vain for the appearances he describes, and believes him to have been deceived by the aspect in certain positions of plates of cholesterine.

The two substances must be regarded as excretory; the one from the liver, the other from the skin.

XVI. *On paracentesis thoracis, as a curative measure in empyema and inflammatory hydrothorax*; by Dr. Hamilton Roe.

XVII. *Account of a case of empyema, which recovered after repeated punctures of the pleural sac*; by Dr. Theophilus Thomson.

Both these papers will be noticed in a forthcoming article on Empyema.

XVIII. *Observations on the omental sacs, which are sometimes found in strangulated hernia, completely enveloping the intestine; with cases and dissec-*

tions. To which has been added a table of all the strangulated herniæ operated on at St. George's Hospital in 1842-3; by P. Hewett, Esq. The writer of these remarks describes a condition which has been rarely met with, and is very imperfectly noticed by Sir Astley Cooper and other systematic authors. The condition is that in which the intestine is "contained in a complete sac formed by the omentum, which it is absolutely necessary to divide, to reach the gut." Such sacs were found in four of thirty-four cases of operation for strangulated hernia in the course of two years—two were femoral, one inguinal, one umbilical. Richter referred the formation of these sacs to firm agglutination of the margins of the omentum which has surrounded the bowel. The two following explanations have been added: "1st, the gut, completely enveloped by the omentum, passes through the ring, and the omentum becomes attached to the circumference of the neck of the hernial sac. 2d, an epiplocele takes place, and the portion of omentum which is protruded becomes altered in structure, and its folds firmly united to each other by effused lymph. But the folds into which the omentum has been drawn *within* the abdomen, by the escape of a portion of it *without* that cavity, may not be agglutinated; so that spaces are left into which a knuckle of intestine may force its way, and thus form an intestinal, superadded to an omental, hernia."

These omental sacs may attain great size; and alterations of structure, leading to thickening, &c., may so affect the state of the parts as to become the source of great difficulties in the operation.

The omental sac may either lie loose in the cavity of the hernial sac, or the two sacs may have contracted adhesions with each other.

In cases where the hernial sac *appears* to contain thickened omentum only without intestine, the absence of the latter should not be made matter of too hasty conclusion; but a longitudinal incision practised in the whole length of the thickened omentum, if the fact of the non-inclusion of intestine be not otherwise satisfactorily ascertainable.

The intestine contained in the omental sacs described was adherent to their internal surface in one instance, non-adherent in the other.

The neck of an omental sac may become the sole cause of strangulation. One of the cases well illustrates this fact: Mr. Hawkins was obliged to divide the neck of the omental sac, before the gut could be reduced. Such cases, the writer very correctly observes, afford a striking argument against the practice of reducing a hernia without opening the hernial sac; had the practice been followed in this case, strangulation would have continued after, as before, the operation.

Free hemorrhage may occur from division of the arteries of the omental sac; precaution should be taken, as far as possible, to prevent the entry of the effused blood into the abdominal cavity.

This paper throws light upon an interesting point of practice.

XIX. *Account of a case of a dissecting aneurism of the aorta, innominate, and right carotid arteries, giving rise to suppression of urine and white softening of the brain*; by Dr. R. B. Todd. A stout gentleman, aged 37, fainted at dinner, quickly recovered, but then complained of abdominal pain, nausea, and pain in the back. The abdomen was now tense and swollen, but not very tender to pressure, the pulse extremely feeble and irregular.

The patient vomited, and had his pain relieved by bran poultices. The next day violent lumbar pain, extending to the groin and testicles, existed, urine scanty, no sickness, bowels open, limbs with natural power, drowsiness. Dr. Todd saw the patient seventy-two hours after the first attack: no urine had passed for forty-eight hours; stupor, but ability to answer questions rationally when roused; right pupil larger than left; paralysis of left side of the face, deviation of tongue to right; left upper and lower limbs slightly paralysed; twitchings; no reflex action excitable; these paralytic symptoms had come on suddenly a few hours before Dr. Todd's visit; no urine in bladder; no nausea or vomiting; pulse small and feeble on right side, full on left; bellows' murmur with first sound at the base of the heart and in the direction of the innominata. The patient's health had been good up to the time of the attack, he hunted, and eat—as hunters only can eat; he stated that “he had always felt some difficulty on the right side, as if he could not breathe as freely as on the left.” The “respiratory murmur on the right side was not so loud as that on the left, but the difference was not more remarkable than is frequently observed in the most healthy persons.” It occurs to us to inquire of Dr. Todd how often he has “in perfectly-healthy” chests detected an excess of force in the respiratory murmur on the *left* side? had he not held the opinions here inferred, his diagnosis might have been nearer the mark,—at all events he would have been led to look for a cause of the phenomenon. The urinary secretion was restored in a few days—urine albuminous; the cerebral symptoms eventually seemed to have somewhat yielded; but at twelve o'clock at night of the eleventh day of the attack, “just as he had finished drinking, he was seized with a slight convulsion, and fell back dead.” The centrum ovale on the right side was “worm eaten in patches,” the patches colourless, and softened to such a degree that the cerebral substance in them floated away under a stream of water; there was no pus or blood in them; the whole right hemisphere was particularly anemic, the left natural. The arteries of the affected hemisphere free from disease. The pericardium was distended with blood, which had escaped through a rent large enough to admit a goose-quill, situate an inch above the orifice of the vessel. The outer coat of the arch of the aorta was separated for some extent from the middle by an accumulation of blood, ulceration of an setheromatous patch having opened a passage through the two inner coats for the blood. “This separation of the coats proceeded along the posterior surface and convex edge of the arch, involving the innominata artery, and to a partial extent the left carotid and subclavian. The middle coat of the aorta was split into two layers, between which the blood formed for itself a new channel, down to the abdominal aorta, in which it was evident, from the presence of recent coagula in it, that blood had recently flowed. A new channel was likewise formed by the splitting of the middle coat of the innominata on its outer and posterior part. This channel extended up to the lower part of the common carotid artery, and the blood accumulated there to such an extent as to obliterate the course of the artery completely, and effectually to stop the ascent of the blood into it. Two channels were thus found in the innominata; one leading to the carotid, which was formed by the splitting of the middle coat; the other the natural one, much diminished in size, through which the subclavian was supplied.” The new channel

in the aorta, the reporter of the case supposes, must have extended sufficiently low to impede the flow of blood in the renal arteries; but the part was not examined. The liver was large, the kidneys said to have been in "the second stage of granular disease,"—nothing is stated concerning them, but that they were large and congested, and these states (albuminous urine existing even) do not suffice to prove that this was not simple nephritis; we do not deny the existence of the alleged disease, but the evidence should have been given. The fainting and pain in the back Dr. Todd ascribes to the tearing up of the aortic walls and sudden diversion from the brain of the quantity of blood supplied greatly by one carotid artery.

Dr. Todd thinks the case a very conclusive one in favour of the doctrine which ascribes white softening of the brain to a process analogous to senile gangrene. It is not possible, from Dr. Todd's anatomical description, to form a very precise judgment concerning the date or stage of progress of the softening observed in this individual case; nor does he himself make any direct statement as to the period he may have supposed it to have existed. But he seems to consider that it was produced as a secondary lesion during the fatal illness described: the patient was healthy, and had been recently "twice passed as a healthy assurable life, by men of great discrimination." But men of great discrimination, whose minds have had no special bias towards the study of cerebral disease, may, without great strain of imagination, be supposed to allow a case of slight latent softening of the brain to slip through their fingers, and yet have no slur cast upon that discrimination: Was this case one of this description?—probably (but by no means certainly) not.

The narrative of the case is very creditable to its author.

XX. *Case of aneurism of the external iliac, in which a ligature was applied to the common iliac artery*; by R. Hey, Esq. Mr. Hey tied this vessel for aneurism, rapidly enlarging, of the left external iliac; the wound healed, and the ligature came away on the twenty-eighth day after the operation, and about fifty days after it the patient had recovered his usual health. The operator refers to the following circumstances as affording much anxiety to the medical attendants. The patient complained of a constant sense of distension of the bowels accompanied with violent spasm, especially when the bowels were moved: in a word, enormous distension of the rectum with hardened feces took place, alarming symptoms were induced, but relieved at once by mechanical removal of the contents of the rectum. The pressure of the aneurismal sac on the colon prevented the contents of that viscus from descending into the rectum, thereby causing a gradual accumulation which was set free by the absorption of the contents of the sac.

"This is the first case which has occurred in this country in which aneurism of its branches has been cured by tying the common iliac artery."

XXI. *Two cases of tubular expectoration from the bronchi in the adult*; by Dr. Reid. Two cases of pseudo-membranous bronchitis, in which the plastic matter formed hollow casts of some of the bronchial tubes, are described under the above title. The narrations scarcely bear condensation, and we prefer referring the reader to the original; in his exordium Dr. Reid very palpably exaggerates the rarity (which is no doubt unquestionable) of such cases. "The disease is of too rare occurrence," observes the writer,

to enable us to pronounce whether it is hereditary or not. Still, the fact of two brothers, of different callings and living in different places, having so rare a disease, tends very strongly to show, that it depends on some inherited peculiarity of constitution. The more severe complaint, which may be considered in some respects analogous to it, and to which the French authors have applied the term of "*Angine couenneuse*," appears to be so occasionally. Thus, by Bretonneau's account, the Empress Josephine died from the effects of this disease; her daughter, Hortense, was for some time subject to it; the son of the latter died from an attack of croup; whilst her nephew, the Duke of Leuchtenberg, consort of the Queen of Portugal, fell a victim, at a later period, to a complaint of a similar nature.

XXII. *A tabular view of the seat of tubercle, in 180 cases of tubercles of the lungs in children, with remarks on pulmonary phthisis in the young subject*; by P. Hennis Green, M.B. The writer's design in this paper is to indicate a few of the peculiarities which distinguish infantile consumption from the phthisis of adults, rather than to give any detailed history of phthisis, as it occurs in the young subject.

The paper contains a tabular view of the seat of tubercle in 180 cases of the disease occurring in males, aged from two to fifteen years.

The main character, it is stated, which distinguishes the phthisis of children from that of adults, is that in the former the tubercular deposit occupies a much larger surface of the lung, is more rapidly secreted, and is complicated with tubercular disease of other organs, more frequently than in the adult. Hence children sink under the affection earlier than grown persons, and the disease, from the diffusion of the tuberculous matter, is with greater difficulty to be diagnosticated. Bronchial phthisis is peculiar to the child.

Miliary tubercles, yellow infiltration, and the common yellow crude tubercle, are the forms under which the disease exhibits itself. "Yellow infiltration" ought to have been, but is not, described.

Crude tubercle in the child, as in the adult, more frequently occupies the superior lobes than any other part of the lung. Of 112 cases, the disease existed as follows, in respect of the lung attacked:

Both lungs . . . . .	101
Right lung only . . . . .	3
Left lung only . . . . .	8

In these 112 cases the deposit was confined to the bronchial glands in 12 cases; to the pulmonary tissue in 12. In 68 other cases the bronchial glands alone were tubercular, and in 1 the pulmonary tissue alone. In 3 cases tubercle existed in the cavities of the head or abdomen, and had not formed in the chest. This shows, as the writer observes, that M. Louis' law does not apply to children; but M. Louis never so applied it.

Cavities existed in 31 of the 112 cases; on the right side in 12, the left in 11, and both sides in 8 cases. It is a point of importance that in children under five years of age the excavation is generally seated in the lower or middle lobes, and is almost always confined to one side of the chest. As the child approaches the age of twelve or fourteen years, the cavern occupies the upper lobes, and is often found in both lungs, as in the adult.

Caverns are of two kinds; one precisely similar to that occurring in the grown person; the other variety (peculiar to the child, and most common

before three years of age,) is produced by the process of softening taking place in the midst of yellow infiltration.

Dr. Green gives a very interesting parallel between adult and infantile phthisis, in respect of the frequency with which other organs besides the lungs are implicated in the tuberculous disease. We shall throw this parallel into a tabular form.

ADULT. (Observed by Louis.)		CHILD. (Observed by Green.)	
<i>Tubercles in</i>			
Brain or membranes	$\frac{1}{358}$ of the cases	..	$\frac{1}{9}$ of the cases.
Bronchial glands.	$\frac{1}{8}$ "	..	$\frac{100}{112}$ "
Mesenteric glands	$\frac{1}{8}$ "	..	$\frac{1}{2}$ "
Liver	$\frac{1}{179}$ "	..	$\frac{1}{9}$ "
Kidneys	$\frac{1}{34}$ "	..	$\frac{1}{18}$ "
<i>Ulcerations in</i>			
Larynx	$\frac{1}{4}$ "	..	$\frac{1}{112}$ "
Bowels	$\frac{5}{6}$ "	..	$\frac{1}{7}$ "

The value of this parallel needs not to be insisted upon.

Two forms of this disease must, according to the author, be separately considered in respect of symptoms. In the one the functional phenomena are the same as in the adult phthisis (this occurs in children aged from ten to fourteen); this form the author correctly considers it unnecessary to describe. In the other class of cases, "the complaint is commonly acute from the commencement, and is accompanied by various signs of the tubercular diathesis. The child has irregular accesses of fever, with heat of skin, acceleration of the pulse, and slight flushing of the cheeks, while the rest of the face is pale and haggard. The tongue is often furred, and red at the edges; the abdomen sometimes tumid, and the bowels irregular; the child may complain of headache and want of sleep; the appetite fails, and emaciation soon sets in. The patient is now seized with a small, dry cough, accompanied by oppression and acceleration of the breathing; there is no expectoration; on examining the chest, the physical signs are few and uncertain. When the miliary tubercles, or granulations, are sufficiently numerous, and collected in the upper lobes, we may perceive a certain roughness in the respiratory murmur, and some prolongation of the expiratory sound; but these signs are frequently masked, either by the existence of other lesions in the chest, or by the tubercular deposit being seated in the lower or middle lobes. The presence of tuberculous infiltration is indicated by feebleness or absence of the respiratory murmur, with some dullness on percussion; but these signs are common to chronic pneumonia."

But even where cavities exist, physical signs are often completely absent, when the child is under five years of age. The importance of the fact is sufficiently obvious, no matter "whether this absence of cavernous signs depends on the seat of the cavity, on its anfractuous formation, or (as

MM. Billiet and Barthez have suggested) on the small caliber of the bronchial tubes in very young children."

The cough occasionally occurs in paroxysms somewhat resembling those of whooping-cough. In such cases, the author thinks there is reason to believe that the paroxysmal character depends on pressure by enlarged bronchial glands.

The respiration, with the advance of the disease, *may* reach 80 in a minute; but if the affection run a chronic course, the breathing is seldom much accelerated.

Dr. Green relates a striking example of the well-known fact that young children swallow everything that comes from the lungs. A child, two years old, died suddenly from the rupture of a blood-vessel in a cavity. A very small quantity of blood had been discharged through the mouth; but after death the stomach and duodenum were found full of enormous clots of blood.

The writer observed hemoptysis five times in the 112 cases,—in two instances sufficiently abundant to cause sudden death. His experience is somewhat peculiar here: the extraordinary rarity of hemoptysis in children is universally recognized. And it is to be observed that in Dr. Green's five cases, the patients were all aged upwards of nine years.

Dr. Green adds nothing to our existing means of distinguishing acute phthisis from lobular pneumonia.

The bronchial glands were more or less extensively tubercularized in 100 of 112 cases. In a few only of these cases, however, were the glands sufficiently enlarged to produce symptoms through their mechanical effects, or by communicating with caverns in the lungs, or with the bronchi; to such cases, the writer justly observes, the term bronchial phthisis should be confined. Various symptoms dependant on pressure of the great vessels, œsophagus, and trachea, may be observed. The diagnosis of this form of phthisis in children must, it is said, be based upon the absence of the physical sign of tubercles in the lungs, in cases where the rational symptoms of phthisis are present. But, as we have already seen that the presence of tubercles in the lungs, and even of caverns, may be masked by various circumstances, it does not appear that the principle here laid down may always, or even commonly, lead to a very satisfactory diagnosis.

This is a truly valuable paper.

**XXIII.** *Case of a tumour in the right hypochondrium occurring after injury, from which a large quantity of fluid resembling bile was repeatedly withdrawn by the operation of tapping; by W. B. Barlow, Esq.* A strong healthy man, aged 54, injured himself by lifting a heavy ladder; he complained of severe pain in the region of the liver. Two days after, the motions were nearly white, and the urine dark, as of a jaundiced person. On the seventeenth day, a swelling the size of a walnut was observed over the region of the liver. About six weeks after the accident, no bile having yet passed per anum, and the swelling being greatly increased in size, it was tapped, and seven quarts of a fluid composed in by far the greatest part of bile, drawn off. Subsequently six and a half quarts, seven quarts, six quarts, four and a half quarts, and three pints of a similar fluid were removed at different periods. The bile ultimately resumed its proper course, and in about four months after the accident the man was convalescent.



XXIV. *Peculiar case of gelatiniform cancer, in which nearly all the organs of the body contained colloid tumours, with the appearances on dissection*; by J. C. Warren, M.D. (U. S.) A painter, aged 25, applied to Dr. Warren in May, 1840, on account of a tumour on the right side of the neck: it had existed for a year and a half. He died on the 21st of the following September. Among the post-mortem appearances were the following: The surface of the body was studded with subcutaneous tumours, "composed of small granulations, constituted by sacs containing a substance which appeared at first view to be wholly gelatinous, but which, on being divided, discharged a small quantity of viscid fluid. The colour was a mixed gray and red; they were slightly transparent; in consistence they were friable: most of them were connected with small veins, and had a vascular tissue upon their outside." Similar tumours existed in the thyroid gland, diploe, muscles, mediastinum, muscular substance and cavities of the heart, lungs, pancreas, kidneys and testes. The tumour in the neck resembled a scrofulous enlargement of glands, as likewise did various diseased lymphatic and mesenteric glands. The liver contained scirrhous nodules; the absorbent vessels of the surface of the abdomen contained a matter having some of the characters of encephaloid. The general dissemination of these little semi-transparent tumours, and their losing their transparency in alcohol, induced Dr. Warren to doubt whether they were really specimens of colloid cancer, or of some peculiar and distinct formation. The case is a valuable contribution to, and deserves to be specially studied by those engaged in the pursuits of, pathological anatomy.

XXV. *An account of the examination of a cyst containing seminal fluid*; by James Paget, Esq. Guided by certain observations described in this paper, Mr. Paget considers that "the most probable explanation of the occurrence of spermatozoa in the fluid of cysts connected with the testicle, seems to be that certain cysts, seated near the organ which naturally secretes the materials for semen, may possess a power of secreting a similar fluid." The grounds of this hypothesis will be found in the original.

XXVI. *Some statistical records of the progress of the Asiatic cholera over the globe*; by W. J. Merriman, M.D. This paper, though highly creditable to the industry of its author, does not require, in the present condition of public health, to be particularly noticed.

XXVII. *Case of necrosis of the lower jaw, recovered from without deformity*; by W. Sharp, Esq. The title of this paper is quite as communicative as the narrative it introduces.

XXVIII. *Remarks on the pathology of mollities ossium, with cases*; by S. Solly, Esq. Mr. Solly relates, and illustrates with lithographs, two cases of osteomalacia; he thus relates his views concerning the nature of the affection: "After a careful consideration of all the facts, but especially by comparing the appearances after death, with the symptoms during life of this awful disease, I am led to believe that it is of an inflammatory character. That it commences with a morbid action of the blood-vessels, which gives rise to that severe pain in the limbs invariably attendant on this disease, but more especially in its commencement, and exhibits itself after

death by an arterial redness of the part. The absorbent vessels are at the same time unnaturally excited, and the earthy matter of the bone is absorbed, and thrown out by the kidneys in the urine, which excretion is sometimes so abundant, as we have seen in the last case, that it clogs up the calices and pelvis of the kidney, and forms there a solid calculus . . . The place of the phosphate of lime in the bones is supplied by that morbid secretion of red grumous matter, which has been so universally found in this disease." The author adds little to the facts established by Miescher, Gluge, Müller, and G. O. Rees (*inter alios*): as regards the theory of inflammation, it is wholly hypothetical,—“arterial redness” does not prove the presence of inflammation, and even if it did, where is the evidence that the inflammation be otherwise than secondary in the sequence of events?

XXIX. *Case of fistulous communication between the intestinum ileum and urinary bladder, simulating stone in the bladder*; by W. C. Worthington, Esq. It seems rather difficult to imagine how a “communication” can “simulate” a “stone;” but this is a mere verbal difficulty. However, in point of fact, the symptoms existing in the case do not strike us as those of calculus, but simply of chronic cystitis. What was the design in submitting a meagre old woman, aged 65, “suffering from an obscure abdominal affection,” to a “mild mercurial course?” When will the indiscriminate abuse of mercury cease to be a stain on English practice?

XXX. *Observations on the recorded cases of operations for the extraction of ovarian tumours*; by B. Phillips, Esq. Here is the “conclusion, where nothing is concluded.” At least it is difficult to extract from the writer’s pages any precise inference as to admissibility of this operation. This however, arises not from Mr. Phillips’s deficiency, but from the nature of the case he has to examine. “The experience we possess,” he says, “justifies us in the expectation that in forty-four cases out of 100, the tumour may be extracted, and life saved; but at the same time it cannot be concealed that out of the eighty-one operations to which we have referred, thirty-two died, and that soon, in fact in a very few days. Whether these results justify a medical man in recommending a patient to submit to the operation, is a question which will probably be decided differently by different men, perhaps in neither case upon the merits.”

It is to be observed that all unfortunate cases have not been chronicled; Mr. Phillips makes allusion to five unrecorded operations, three of which at least terminated by death.

The tables accompanying this paper are valuable and judiciously put together, like everything that comes from the pen of Mr. Phillips.

## ART. VII.

*Causes générales des Maladies Chroniques, spécialement de la Phthisie Pulmonaire, et Moyens de prévenir le Développement de ces Affections, &c.* Par A. FOURCAULT, de l'Académie Royale de Médecine.—Paris, 1844.  
*On the general Causes of Chronic Diseases, particularly Pulmonary Phthisis, and on the Means of preventing these Affections, &c.* By A. FOURCAULT, of the Royal Academy of Medicine, &c.—Paris, 1844.  
 8vo, pp. 480.

THE volume before us consists of a number of essays, the common bond of their union being the relations of the cutaneous function to pathological states, and especially to that constituting phthisis pulmonalis and the numerous class of disorders known as scrofulous. M. Fourcault's more general proposition is, that the causes of disease are not so diversified as commonly supposed, that they exercise their power principally upon the skin, and that they act in general by diminishing or suppressing the cutaneous exhalation or insensible transpiration. If it be suppressed suddenly, diseases follow of an acute character; if slowly, they take the chronic form.

A moist atmosphere diminishes the cutaneous transpiration and consequently induces disease. In France, in small towns containing about 2000 inhabitants, and situate so that they enjoy a dry air, the mortality from phthisis ranges from 1 in 40 to 1 in 60. Persons may live in a moist atmosphere with impunity if they favour the cutaneous transpiration by active exercise. That is to say, the employments that induce sweat are little favorable to scrofula or consumption, although carried on even in water. The most usual disease of artisans of this class is rheumatism, to which tanners, wool-washers, laundresses, dyers, &c. are subject. Miners work in damp, ill-ventilated localities, yet they are rarely phthisical, the warmth of the mine and the severity of their labour affording a prophylaxis through the necessarily augmented perspiration. The following conclusion from these and other facts, as for instance, the health of animals confined in menageries, we give in the words of the author:

"These facts, which can be observed everywhere, prove conclusively that muscular exercise, either in the open air or in the house, is indispensable to health; that when man is deprived of it, he becomes liable to the most serious chronic maladies; for without it, the excreting function of the skin is inactive; the capillary circulation becomes languid, and a tendency to congestion of the viscera supervenes. Guided by these results of my first statistical researches, I have adopted this general principle: *To protect man or animals from tubercular affections, it is requisite that they be habitually exposed in the state of freedom to the influences of the atmosphere.*" (p. 24.)

Having deduced this principle, M. Fourcault proceeded on his travels, that he might further establish it by numerous observations. With this foregone conclusion he visited Holland, Belgium, the south of France, Italy, and England, and collected his facts in hospitals, almshouses, work-houses, prisons, factories, and agricultural colonies. He found that dis-solute conduct, the action of dust on the air-passages, restricted positions, while at work, and tight-lacing have a secondary and unimportant influence in the development of phthisis pulmonalis. One example of this kind he

derives from the hygienic condition of the *filles de pavé* at Paris. Parent-Duchatelet ascertained that they perish in great numbers if reclaimed, and kept closely to work with the needle. These repentant and reformed women die phthisical, or suffer from various chronic diseases. Those however who continue their debased occupation are fat, fresh-looking, and healthy, but they enjoy their liberty, take exercise, and are freely exposed to atmospheric vicissitudes.

An inquiry into the effects of sedentary professions generally shows that they co-operate with humidity in multiplying the number of chronic maladies. At Amsterdam and Leyden, for example, M. Fourcault found scrofula and phthisis extremely frequent. Of 457 deaths in the great hospital at Amsterdam during the year 1840, 101 were from phthisis, namely 66 males and 35 females. In Holland there are *ateliers de charité*, or charitable institutions, where the poor can have work, established both in the large towns, and in certain agricultural colonies founded for the special purpose of reclaiming waste and useless land. The mortality in the civic ateliers is much greater than in the rural: of 38 deaths in the latter, only 3 were from phthisis. The workhouses (*dépôts de mendicité*) present a high rate of mortality, although young and robust men are received.

The mortality varies from 1 in 9 to 1 in 6, the proportion in the *dépôt de mendicité* at Amsterdam. Analogous results are seen in France. This high mortality is the consequence, according to M. Fourcault's views, of deficient ventilation and exercise.

The seclusion and inactivity of a prison life is particularly favorable to the development of phthisis. At Vilvorde, out of 63 deaths, 34 were from phthisis. In the central prison at Ghent, of 168 deaths 87 were from phthisis. At Vorisy, during ten years, there were 282 deaths, 178 of which were from pulmonary consumption, and only 29 from acute disease. At Gaillon, the results are similar, but here dropsy and scorbutus are also fatal, the prisoners not being allowed animal food, or fermented drinks. At Auburn in the United States (a prison constructed for solitary confinement), 70 per cent. of the deaths are from phthisis.

The effects of sedentary employments in inducing phthisis are seen in the manufacturing town of Lille. Here the weavers, lacemakers, embroiderers, &c., die phthisical and scrofulous in great numbers. The general hospital there presents a remarkable proof of the fatal effects resulting from deficient exercise. The building is also an hospital or asylum for foundlings. The infants being received here are sent into the country, and on attaining a certain age are brought back to be educated. The girls are employed in spacious apartments at sedentary employments, the boys go out to follow different trades in the city. The latter free to go about and with ample scope for exercise are strong and robust; the former are pale, languid, and chlorotic. They seldom die of acute disease, but suffer from scrofulous affections and especially caries of the vertebrae. At Vienna, M. Fourcault found some mutilated mulberry trees opposite the windows of the girls' school-room in the foundling hospital there, and on inquiring the reason of their mutilation, was informed that their shade manifestly rendered the chronic affections from which the girls suffered more severe, and that since a freer evaporation and more light had been thus obtained, their health

had visibly improved. As it was, a fifth of the females presented one or other form of rickets. At Marseilles, there is an asylum for orphans: in 21 years, 45 had died of pulmonary phthisis out of a total of 68 deaths.

M. Fourcault found the operatives of silk factories more liable to disease than those of cotton mills. The employment in mills generally is unhealthy in proportion as the rooms are narrow, dark, and crowded, the toil prolonged, and the labour light, or rather, not demanding much muscular effort. The inhalation of dust is much less injurious, he asserts, than is generally supposed. M. Fourcault quotes examples illustrative of this proposition. The contrary results are seen when the workrooms are spacious and well lighted and ventilated, as at Louviers and Elbeuf.

From these and similar facts M. Fourcault takes occasion to impress on his readers the great necessity of free exercise in the open air, so that the excreting functions of the skin shall be duly excited by muscular action and the surface itself exposed to a pure atmosphere. He quotes our own gracious Queen as an example in this respect to all persons whose circumstances will permit them to follow it. He also refers in a note to the hygienic treatment of the royal family of Belgium. Being at Ostend in 1840, he met the children walking on the sands in pursuance of the advice given by Sir James Clark and M. Lebeau.

*Phthisis in captive animals.* M. Fourcault devotes a short chapter to a consideration of the hygienic condition of captive animals. The facts are not different from those generally known in this country. It appears that in Paris the animals from tropical climates, and especially monkeys, usually die of tubercular disease. Tubercles are found in the liver, the bronchial and mesenteric glands, and even in the cellular tissue, as well as in the lungs.

An important fact illustrative of M. Fourcault's views has lately been observed in the garden of the Zoological Society of London. By freely ventilating the houses of the monkeys, &c., the great tendency to disease and death has been most happily interfered with. And it has been found that even tropical animals preserve their health much better when allowed to expose themselves in the open air even in winter, than when confined, as formerly, in close heated apartments; the good of the *exercice*, apparently, more than compensating for the evil of the lower temperature.

*Influence of humidity.* The injurious repression of the cutaneous excretion by moisture in the atmosphere has been already noticed. In this (the 4th) chapter, M. Fourcault enters more into detail. He observes that much still remains to be known, and much of what is known to be promulgated and understood. The controversies of Broussais and Laennec prove that they were both unacquainted with the important influence of suppressed perspiration in developing tubercles. He ridicules the proposition to send phthisical patients into marshy countries because it appears that phthisis is rare where intermittents prevail. For the same reason they might be sent into mountainous countries where acute diseases are most prevalent. The antagonism of phthisis and intermittents has been popularly known in England for many years. Even at the present moment, it is not unusual to have aged persons observe, that since there was less ague there has been more consumption. We think the apparently anomalous fact may be satisfactorily explained by the law of equilibrium between

the causes of mortality referred to subsequently by M. Fourcault. The persons who formerly died of ague, or its sequelæ, would have died of consumption.

The effect of a moist locality on the numbers of deaths from phthisis is shown by some comparable instances. The village of Ezy is situate near the little town of Anet in the valley of the Eure. In the former, the deaths from phthisis constitute one eighth of the total deaths, in the latter they are only one fiftieth. Ezy is so situate, that to the west and north, it is sheltered by a mountain; to the east and south, by lofty trees which intercept the atmospheric currents, and so prevent evaporation. Anet, on the contrary, is situate on an elevated, open, sandy portion of the valley, accessible to the winds. Scrofula and other chronic diseases are most prevalent at Ezy, acute affections at Anet. The village of Fontenay-Saint-Père is made up of several hamlets differently situate. The people of those on an elevated site, and exposed to the south, are little subject to phthisis or scrofula, but the inhabitants of the low-lying damp hamlets are a prey to every form of scrofulous disease.

The influence of damp habitations and moist climates is also demonstrated by numerous facts, especial reference being made to England. Although one sixth of the deaths are from consumption, M. Fourcault thinks that disease is much less fatal than it would be were it not counteracted by our frequent sea-voyages, our "biftecks" and "rosbifs," and other salutary precautions.

*Humidity as the common cause of intermittents and phthisis.* M. Fourcault doubts the existence of a specific agent in the causation of intermittent fevers, and he thinks the hypothesis of an unknown poison unnecessary for the explanation of their phenomena. These fevers depend on the concurrence of three essential conditions, moisture of the air, elevation of temperature, and atmospheric vicissitudes. In all localities where these exist, sporadic or epidemic fevers will prevail, although there be no marshes; and he mentions several examples, as the mountains surrounding the Agro Romano at Tivoli, Subiac, Terni, &c. Again, in those years in which much rain falls, and a damp coldness at night follows suffocating heat during the day, epidemic fevers prevail; and, on the contrary, a year remarkable for a continued high and uniform temperature is remarkable for its healthiness. M. Fourcault is of opinion that the suppression of the cutaneous secretion after exercise, while the conditions mentioned are active, is the principal cause of intermittent fever; and he adduces such facts as he thinks conclusive on this point, but they appear to us to involve a *petitio principii*.

*The influence of physical agents on the development.* Dampness may not only produce the diseases already attributed to it, but may also alter the general conformation of man. In deep narrow valleys where the atmosphere is saturated with moisture, and its circulation impeded, goitre and cretinism, forms of disease closely allied to scrofula, are endemic. Leprosy, according to M. Fourcault, has a similar origin. These diseases are propagated hereditarily; if this fact be taken into estimate, it will be found that in proportion as the valleys widen, and the air (being more freely moved,) is drier, there endemic diseases become less frequent. To their residence in damp, dark huts, is to be attributed, M. Fourcault thinks, the

stunted growth of the Esquimaux and Laplanders. Similar anomalies of development are found in those civilized communities in which individuals are exposed to similar morbid agencies, as weavers, miners, and others who work in damp, dark, and ill-ventilated places. The locality may even give the characteristics of a race; thus, the cradle of the Gael, with his stunted body and thick short limbs and fingers, has originally been in the winding valleys of high mountains, while the parent stock of the tall, well proportioned Cymri has enjoyed the sides of hills exposed freely to the sun and wind, or has resided on the sea-coast.

*Experiments on the functions of the skin.* This chapter is made up of an extract from the Report of the Commission on the Montyon Prize Essays in 1840, and which adjudged 2000 francs to M. Fourcault for his experiments. The original essay contained first, a series of experiments on animals, and secondly, deductions from those experiments. M. Fourcault conceived the idea of ascertaining the effect of suppressed cutaneous transpiration by varnishing or otherwise coating the whole or portions of the skin of living birds, dogs, &c., so that no moisture could escape. He found that changes in the characters of the blood and local lesions constantly followed a mechanical suppression of the cutaneous secretion. He ascertained that the skin has special relations to certain mucous membranes. A horse was impermeably coated over, and it died with a profuse discharge from the nose, and its blood resembled that of horses suffering from glanders. Several sheep so treated had a most violent coryza, and after death, inflammation of the mucous membranes of the nose was unequivocally manifest. In rabbits and dogs, diarrhea supervened and inflammation of the intestinal mucous membrane. In the latter, the liver was also enlarged, congested, and in a state of softening.

The lesions consequent on this mechanical suppression of cutaneous function were not confined to the mucous membranes; effusions into the serous sacs, as the pericardium and pleura, paraplegia, marasmus, and miliary tubercles in the lungs apparently of recent formation also resulted. When the whole body of the animal was coated over so that the air could not act on the skin, the respiration became difficult and laborious, and death quickly followed, often with convulsions. The veins and right cavities of the heart contained black blood forming soft diffuent clots, and large ecchymoses were seen in the lungs and other viscera. The capillaries were generally injected. A curious result followed the partial application of an impermeable coating. If for example, one half of the body only was covered, the capillaries on the inner surface of the skin of that half were found to be distended with a dark fluid blood, highly venous, while the capillaries of the skin not covered by the coating contained red blood, and much less of it. The line of demarcation between these two sets of capillaries could be readily traced. This is certainly an interesting fact, and the experiment merits repetition, as endermic medication may be much improved and rendered more precise by knowledge of this kind, not to mention the interesting neurological deductions to be made. M. Fourcault observed these phenomena in mammals, birds, and frogs. He experimented on the latter by suspending them by the feet in a vessel of oil, so that half the body should be immersed.

M. Fourcault attempted to ascertain the relations of the skin to the at-

mosphere, by placing animals in an exhausted receiver ; permitting them, however, to take in air from without by the mouth. No other result followed than that the lungs, stomach, and intestines, were blown up with air from the want of atmospheric pressure. From experiments on the skin of the forearm, M. Fourcault is of opinion, that the cutaneous surface gives out no carbonic acid, and absorbs no oxygen. He has plunged mammals, birds, reptiles, and fishes into aerated water, and into water deprived of its air by boiling, and he has never found any perceptible difference in the duration of life of the animals thus treated. M. Fourcault thinks this experiment conclusive as to the non-respiring function of the skin. Comparative and transcendental physiology is so entirely opposed to this inference that there can be little doubt of some imperfection in the mode of conducting these experiments. It is well-established that frogs respire by the surface.

M. Fourcault mentions a solitary experiment on the function of the human skin, which is curious. When Leo X was elected pope, the age of gold he was to usher in was represented at Florence by a gilded living child ; it soon died. M. Fourcault has gilded and silvered guinea-pigs, and they experienced exactly the same fate.

MM. Breschet and Becquerel repeated M. Fourcault's experiments, with special reference to the development of animal heat. They found that in half an hour after applying the varnish to a shaven rabbit, the temperature fell six degrees of Reaumur, and in half an hour more it had fallen seven additional degrees. M. Fourcault finds, however, that a diminution of temperature (as when guinea-pigs are placed in a damp cold atmosphere) diminishes the cutaneous transpiration, and even causes death. But if animals be kept in baths of oil or water, so that they can breathe and move freely, at a temperature of 15 to 20 degrees (of Reaumur) above the freezing point, although their warmth of body is not perceptibly diminished, they still die. The two fluids are not, however, fatal in equal times, as the animals die sooner in water than in oil ; ducks perish in eight or nine hours in water, but will live several days in oil. M. Fourcault explains this, partly by supposing that water is a better conductor of heat than oil, and that in proportion as the temperature lowers the transpiration diminishes, and partly by the fact that the animals imbibe a considerable quantity. Birds thus treated before they die, vomit a large quantity of a clear and limpid fluid. The animal can be more readily restored however to life after immersion in water than in oil. Immersion in the latter induces the local lesions before described more decidedly, and these are the cause of death. The experiments detailed by M. Fourcault point out very clearly the necessity, in recovering persons drowned, of artificial warmth to the surface, and a free exposure of it to the air.

*The causes of albuminuria illustrated by experiments.* M. Fourcault being of opinion that albuminaria was a morbid result of suppression of the cutaneous function, instituted an examination of the urine of those animals whose surface he varnished or coated. He found that when dogs so treated began to exhibit symptoms of suffering and difficulty of breathing, the urine first became albuminous ; the albumen being often mixed with blood-globules. Very generally when the animal succeeded in removing the substance with which it was coated, the albuminuria ceased,



and the urinary salts reappeared in large quantities. A shaved rabbit was coated with dextrine, and so inclosed in an apparatus that the urine could be collected unmixed with feces. A considerable quantity of albumen appeared in the urine. In another rabbit so treated, the pericardium was found to contain an albuminous fluid. The urine of dogs thus coated, previously acid, became gradually less acid, then neutral, and when it contained a large quantity of albumen a tendency to alkalinity.

M. Fourcault flayed guinea-pigs and rabbits alive, replacing the skin in its proper position, and he was astonished to find that they lived two or three times longer than if they had been encased in an impermeable coating. They maintained their natural temperature and were lively and vigorous to within a few hours of their death. If, however, a layer of dextrine was laid over the flayed surface, albumen appeared. From these and other facts M. Fourcault infers that the skin is solely an excreting organ. Its function is to throw off the free lactic acid and lactates already present in the blood. If this acid be retained it is in excess, and, destroying the equilibrium of the organic affinities, precipitates albumen upon the urinary organs, when the soda of the urine renders it soluble. The cutaneous salts being also thrown back into the circulation pass off by the kidneys and render the urine alkaline.

According to the preceding hypothesis, the introduction of lactic acid or lactate of soda into the circulation would be followed by albuminuria, and M. Fourcault details some experiments which in his opinion prove the fact decisively. These experiments do not however appear to be of more than questionable value. The same remark applies to the comparison of the phenomena of cholera Asiatica with those of suppressed cutaneous excretion.

The next essay is a theory of chronic diseases. In this, which is simply the old doctrine of "catching cold," and "stopping of the pores," done up anew, M. Fourcault shows the origin of rickets, scrofula, phthisis, dropsies, albuminuria, &c., from suppressed cutaneous secretion. The skin, to use his own expression, is the true key to pathology. The whole essay is a remarkable example of the power of a single idea in converging the most dissimilar facts towards itself. An essay on the fundamental principles and epochs of medicine concludes the first part.

*Hygiene of persons predisposed to chronic disease, and particularly to phthisis pulmonalis*, is the pith of the second part of M. Fourcault's volume. He devotes a chapter to a description of the incubation, or first period of phthisis, deriving his description of the symptoms from a translation by Lebeau of Sir James Clark's work on Pulmonary Consumption. The hygiene consists in a strenuous application of the single idea to practice. The patient is to be freely exposed to light and air; is to take sufficient and active exercise; to keep the skin clean and transpirable, &c. The chapter sets eloquently forth the advantages of physical education, and another advocates (what has been much neglected) the utility and advantage of selecting a trade or profession suited to the constitution.

"Every man of a lymphatic constitution and in consequence unfit for labours occupying his whole time, should take moderate gardening exercise. When a fatal hereditariness predisposes him to pulmonary consumption, he will fly from towns and devote himself to hunting, riding, or agriculture. If poor, he should

enter the marine; if rich, travel a part of his life; if a landowner, he should be a farmer in climates where the air is dry, and on elevated ground where it is freely in motion. It cannot be too strongly recommended, that gardening is amongst the indispensable employments in hospitals, schools, orphan houses, and penitentiaries. The life of a soldier is not suited to persons predisposed to phthisis, for the military services render that disease prevalent among the soldiers, and particularly the infantry. Prudence and foresight consequently forbid the admission into the ranks of the army of young men, the sons of phthisical parents, or of those born in damp localities, or marshy plains; or of mechanics taken from cold and unhealthy workshops. It has been observed that a great number of the Flemish weavers enlisted into the Belgian army die of pulmonary phthisis. There can be no question that these different classes of recruits would escape from this dangerous influence if they were entered for sea-service. This destination would be an immense benefit for themselves individually, and a considerable saving to the country." (p. 313-4.)

In the seventh chapter on *air and ventilation*, M. Fourcault states some interesting arguments to show the necessity of ventilating the skin. He would have hygienic precautions of this kind commence in infancy. The clothing of the infant in the cradle should be frequently changed, and the material of such a quality, that the air have free access to the cutaneous surface. When the temperature permits, he advises, that the infant be left for a short time every day completely naked.

One of the most interesting chapters in the book is that on gymnastics, containing a detailed description of Colonel Amoros' gymnastic establishment. The method of this distinguished gymnasiarch does not consist in directing this or that exercise, but in developing the faculties. An anthropobiological table ('tis M. Fourcault's expression) divides these faculties into as many divisions as there are principal branches of his method. Those purely physical are force, firmness, resistance, agility, velocity, address. The mixed or physico-moral are regularity, grace, zeal, courage, energy, perseverance. Among the faculties exclusively moral are prudence, foresight, temperance, generosity, and goodness. The muscular acts and gestures are regulated by chants or songs, and are therefore performed in rhythm. There are songs of labour, of loyalty, of emulation, benevolence, philanthropy, self-denial, &c.; each with *elementary* gestures and movements. These being done, the disciples of Amoros march for a time in column and platoon, and then disperse to a number of machines suitable to every form of gymnastic exercise. A highly-coloured description is given by our author, but allowing for this, there can be no doubt that the method of Amoros is well studied and strictly scientific, and ought to be known as well theoretically and practically by both heads of schools and medical practitioners. M. Fourcault states that the most morose children become gay and generous after a course of these exercises. The face of the lymphatic is animated, and loses its pale sallow tint; unnatural and morbid corpulency disappears; more healthy blood colours the skin; moderate exercise ceases to excite perspiration; in short, both the moral and physical condition of the individual are simultaneously changed. Children and delicate people should not be permitted to choose the kind of exercise they would prefer, because they will choose those in which a weak organ or limb is least exercised, whereas it is necessary to strengthen these by gymnastic movements.

M. Fourcault devotes a chapter to the hygienic effects of music and dancing, and urges the propriety of rendering it useful to the health as well as to the amusement. He suggests the separation of the sexes as the best mode of avoiding the voluptuous excitement of dancing.

The remaining chapters on repose and sleep, and excursions, and sea-voyages, sea-bathing, the use of mineral waters, and of pure water internally and externally, as well as of vapour-baths, contain a good deal of sound advice, and some minor points possess novelty, but not sufficient for our notice. A chapter on social hygiene recommends on various grounds that children should be taught and adults practise at least two employments, and that central, industrial, and agricultural *maisons de travail* (which can scarcely be termed *work-houses* in the English sense, though really such) should be established. These questions are not strictly within our province.

On a general review of M. Fourcault's volume, we find much more to approve than to condemn. It is discursive and illogical, but then it is amusing and instructive. The old-established maxim, insisting on air, exercise, and personal cleanliness, is enforced by new facts and arguments, not absolutely striking, but such that we willingly acknowledge our obligation to M. Fourcault for the useful information on a hackneyed subject we have acquired from his labours. Had he extended his physiological views of the influence of bodily exercise to the whole capillary system, instead of confining them to the skin, he would have come much nearer the truth; and, in this case, we are not sure but we would go along with him in most of his inferences both pathological and hygienic. At any rate, we have long been convinced, and have long acted on the conviction,—we humbly believe with unusual success,—that bodily exercise is one of the most important means in the cure of nearly all chronic diseases; and that it and proper diet and bathing, with a *modicum* of the simplest medications, will slowly yet surely restore lost health, in thousands of cases, where the ordinary routine of heroic medication, such as prevails so extensively in England, will not only fail to cure but inevitably augment the malady.

#### ART. VIII.

1. *Handbuch der Chirurgie, zum Gebrauche bei seinen Vorlesungen*. Von MAXIMILIAN JOSEPH CHELIUS, der Medicin und Chirurgie Doctor, &c. Erster Band. Sechste, vermehrte und verbisserte original-auflage.—*Heidelberg und Leipzig*, 1843.
2. *Manual of Surgery, for use at his Lectures*. By M. J. CHELIUS, Doctor in Medicine and Surgery, &c. First Volume of the Sixth, enlarged, and improved edition.—*Heidelberg and Leipzig*, 1843, pp. 1012.
2. *A System of Surgery*. By J. M. CHELIUS. Translated from the German, and accompanied with additional Notes and Observations, by JOHN F. SOUTH, Surgeon to St. Thomas's Hospital. Part I. 8vo, pp. 112.

THE test of time and often repeated editions have stamped the *Manual* of Professor Chelius with an acknowledged value, which all who have made themselves acquainted with its contents will readily concede to it.

In bringing the present volume before the notice of our readers, it is our intention to present them with a brief analysis of the general plan of the work, and of some parts of its contents; and to illustrate the same by occasional reference to the text; more than this will be unnecessary, as an early opportunity will probably be given to the public of a closer intimacy with the complete work in an English garb.

The scope of Professor Chelius' *Manual* is indicated by its title; it professes to treat, systematically, of the science and art of surgery, but within such compass as to render the work an appropriate introduction and companion to his lectures. The care, however, which has been bestowed upon its construction, and the labour which its research evinces, would be ill-repaid were it confined to this sphere; and we may conscientiously say that we know of no *Manual of Surgery*, on the whole, more deserving of public confidence, or more valuable as a guide and refresher to the young practitioner.

The work is opened by a short introduction on the objects and aim of surgery, and its relation to other branches of the healing art; together with the author's estimate of the natural and acquired qualifications of a surgeon. That we are not opposed to the diffusion of information, and elevation of the general standard of medical education, we trust our pages will bear ample testimony; but we do not profess ourselves to belong to that class who desire to see all professional distinctions extinguished; and we are therefore gratified to find a master in our noble art recognising an elevated standard as essential to surgical proficiency.

"The study" says the Professor, "and the practice of surgery are surrounded by difficulties of no ordinary character. The dexterity and safety with which surgical operations must be performed can only be acquired by long practice on the dead; the opportunities for this are few, and still more rarely do we meet with the perseverance necessary to overcome all the disagreeables which are associated with it. How many have reason to regret their neglect of practising on the dead, when called on to operate on the living! In many cases the life of the patient is each moment in the hands of the operator; the struggles of the sufferer, his cries, and a peculiar feeling to which no surgeon, especially in the commencement of his career, is a stranger, shakes his necessary equanimity, and makes him anxious and unfit to complete his work with celerity and safety. Nor need we wonder when we peruse the candid acknowledgment of the great Haller: 'although I have filled the chair of surgery for seventeen years, and have frequently exhibited the most difficult operations in surgery on the dead, yet have I never ventured to use my knife to the living, lest I should do mischief.'" (p. 13.)

We have not been tempted to make the above quotation by any novelty in the sentiments it contains, but to give force to our opinion that surgical operations are in the present day too lightly esteemed, and frequently practised by those whose opportunities do not justify them in thus tampering with human life. It is impossible that all can be good operators, even were the natural qualifications of all on a par; and we do not hesitate to deprecate, and denounce as unjustifiable and cruel, (to use no stronger term,) the eagerness with which an occasional operation of importance is sought and undertaken for the sake of professional celebrity; and without the excuse, which might have been pleaded before the establishment of the numerous county hospitals, of distance from the metropolis.

Before presenting his readers with his own classification of disease, our

author has to dispose of the often disputed question of the boundary line between that which falls to the care of the physician, and that which it is the surgeon's duty to treat. The merits of this *questio vexata* we do not intend now to discuss; but satisfy ourselves with giving in our adhesion to the Professor's opinion, that any attempt at classification according to the internal or external seat of the disease, or that which is drawn exclusively from the nature of the treatment required (whether mechanical or medicinal,) is altogether unmeaning and absurd, and to be rejected as such. Custom has to a certain extent fixed the limit, which, where it is clearly understood, should be respected; but, at the same time, we think with Professor Chelius, that it is desirable "to seek for some general character of disease, which may serve in some measure to establish a nosological division, and to indicate those diseases which may appropriately be denominated surgical." Our author proceeds to observe that, as the phenomena of life afford us the means of defining a healthy condition as a state of harmony between the physical and organic functions, so the predominance of the one or the other, constituting a deviation from the normal type, presents us with a division of disease into 'dynamic' and 'organic;' and that "organic diseases are especially those which have their origin in a lesion of the natural quality, form, and structure of the organic frame, and may be produced by disturbance of the mutual dependence of organs, by the abnormal union of parts, by the presence of foreign bodies, by the degeneration of organic structures or production of new material, and lastly by the absolute loss or supernumerary presence of organs." The conclusion and inference from these remarks is, that surgery is entitled to all those organic diseases "which have their seat in such parts as are accessible to the sense of touch, or require the employment of mechanical means for their cure." (p. 15.)

The division and classification of disease derived from the above foundation is as follows: 1, of general and specific forms of inflammation, and of inflammation affecting particular organs; 2, of diseases which consist in the disturbance of the physical relation of parts, including wounds, fractures, dislocations; chronic lesions, abscesses, scrofulous and venereal affections, diseases of the vascular system, &c. &c.; 3, diseases which are characterized by the abnormal cohesion of parts; such as stiff joints, adhesion of the gums and cheeks, of the sides of the vagina, &c.; 4, of foreign bodies, whether introduced into the system, or generated and retained there: this head includes the presence of foreign bodies in the trachea and œsophagus, and retention of the fœtus in utero, or urine in the bladder, hydrocele, &c.; 5, this section comprehends all diseases which are typified by hypertrophy or degeneration of organized structures; and the two following treat of the loss of organs, and their supernumerary presence; whilst the eighth and last section is devoted to surgical operations in general and in particular.

It is not our intention to comment on the above arrangement, which, in common with all classifications, possesses its disadvantages as well as its merits; though in one sense simple, it is certainly rather confusing in another; as we find diseases, which possess nothing in common beyond the very general type to which they are referred, mingled together. We shall also pass over in silence the first general section on inflammation,

which contains nothing new, and is a little antiquated in some of its views: but it is much, now-a-day, to expect the practical and practising surgeon to be quite conversant with all the changes and revolutions which our present extended means of observation are progressively effecting. We shall therefore proceed to select indiscriminately from different sections of the volume, and will commence with that on "*Inflammation affecting joints.*"

*Inflammation of the synovial membrane and of the cartilage of joints* is thus contrasted :

"In the commencement (of synovitis) there is slight pain, which either involves the whole articulation, or is confined to one point. Occasionally, however, when this is very severe, fever is also present, and the motion of the joint becomes impracticable. After a time swelling commences, and fluctuation becomes perceptible, the locality varying according to the form, but most distinct where the soft parts offer least resistance. If the attack of inflammation last longer or be often repeated, the swelling waxes larger and firmer by the breaking up and degeneration of the synovial membrane and ligaments; severe pain ensues, accompanied by loss of sleep and hectic fever; the swelling yields at various points, and the power of the patient is gradually exhausted. In the most favorable cases ankylosis is the result." (p. 129.) . . . . "The cartilage of joints may be the primary seat of inflammation and ulceration, which subsequently spreads to the other constituents of the articulation. In the beginning the patient is sensible of slight and transient pain, which is augmented by motion of the joint, and diminished when it is at rest. Gradually this symptom becomes more persistent, and extends from the joint over the bone. Many weeks or even months elapse before any swelling of the articulation is apparent, and when it becomes so it is accompanied by a slight external blush of inflammation. But this swelling is neither marked nor fluctuating, and the general form of the articulation is preserved. Sooner or later matter is formed in the joint, which discharges itself, and the patient sinks with symptoms of hectic. Although the early stage of this disease is almost always insidious, yet the occurrence of peculiar circumstances may aggravate the attacks where the disease is disposed to assume an acute form." (pp. 131-2.)

We thus perceive, what indeed Professor Chelius afterwards remarks, that his observations agree with those of Brodie, and in opposition to the opinions of others, that the latter affection is distinct from that of inflammation affecting the synovial membrane or extremities of the long bones; at the same time he admits that the cartilage "may not be invariably the primary seat of disease in these cases, but that *partial* inflammation may be set up in the synovial membrane, or first exhibit itself in the cancellous structure beneath the cartilage." In the treatment of these affections our author's opinions agree with those generally received and adopted in this country; active depletion in the earlier stage, and counter-irritation when the disease has passed into a chronic form. In praising issues, he justly remarks that good is not to be looked for as an immediate result of their employment; but that free suppuration from the surface must be maintained for a long time, whilst rest is strictly enjoined, before the wished-for effect is obtained. The onset of inflammation of the spongy texture which constitutes the extremities of long bones is described as similar to that of inflammation of cartilage; but the character of the elastic swelling, "which derives its form from the distended head of the bone, and varies in dimensions according to the tension or rest of the joint," is noticed as the chief point of contrast, and as characterising the affection of the osseous structure itself.

*Disease of the hip-joint.* The section on 'Hip-joint disease' is well drawn up, and the descriptions are graphic and natural. This troublesome affection is divided into three distinct stages; commencing with the slight pain and occasional stiffness, which is gradually merged in the more marked characteristics of lengthening of the diseased limb, shrinking of the buttock, and abnormal position of the great trochanter, which constitute the second stage; whereas the shortened extremity indicates the further progress of the disease, which peculiarly characterizes the third and last stage. Our space will not allow us to enter at large upon this subject, but we shall make room for one or two remarks. "The shortening of the extremity," says the Professor, "which is usually observable in the first stage of acute inflammation of the hip-joint is always apparent (not real) and is due to the tilting of the pelvis *upwards* on the affected side." In this opinion we entirely coincide, and believe that the natural effort of the patient to relieve the suffering limb is the cause of that which some writers have set down to muscular spasm.

"The lengthening of the extremity, which is observed in the chronic form of hip-disease, or the later stage of the acute, when morbid changes in the joint have already taken place, may be either *apparent* or *real*. The apparent shortening may here also depend on the tilting of the pelvis, as the sufferer in this tedious disease manages still to keep about, (dragging the affected limb,) and thus throws the whole burden of support on the healthy limb; by this means as well as the constant position maintained in bed, the pelvis becomes in such wise twisted as to be elevated on the sound side, and depressed on the opposite. In the later stage of the disease, when the morbid changes in the joint have extended further, actual lengthening of the diseased extremity becomes evident, which does not depend on any mechanical derangement of the relation between the head of the thigh-bone and its socket, and the extrusion of the head of the bone, by reason of its great bulk; but it is due to the extension of the capsular ligament, to the accumulation of fluid, the relaxation of the capsular ligament, and the entire rest of the muscles." (pp. 139-40.)

On the subject of experiments performed by Weber, from which he infers the important influence of atmospheric pressure in preserving the integrity, as regards relation, of the articulating ends of bones, our author remarks that the results obtained by his countrymen are of the most lively importance as bearing upon diseases of the hip-joint. We subjoin his reasoning upon the subject, as we think that scarcely a due value has been attached to the practical bearing of these experiments in this country. It is hardly necessary to remind our readers that, in the experiments alluded to, Professor Weber has shown that after division of all the muscles, and even of the capsular ligament itself (say of the hip-joint,) the weight of the entire limb is insufficient to overcome the resistance to dislocation of the head of the bone; the sequel of the experiment proving the operative cause, viz., the admission of air by a perforation of the acetabulum from within. These experiments are not difficult to perform, and are satisfactory in their results. (See a brief account of them in our Second Volume, p. 236.)

"We have therefore every reason to conclude," says our author, "as we have already pointed out, that the explanation of shortening of the extremity by pressure operating forcibly upon the corresponding surfaces of the articulation is altogether inadmissible; and on the other hand, that relaxation of the muscles alone is quite incompetent to produce lengthening of the limb; and further, that the existence of a certain space between the head of the bone and its socket, which

was formerly assumed, and imagined to change with each contraction of the muscles and to be augmented during their relaxation, is altogether ideal; but that, on the contrary, the most perfect and intimate contact must exist. It still further follows that, in cases where a real lengthening of the limb exists, an essential precursor of this symptom invariably is the destruction by morbid changes of the natural contact of the articulating surfaces; and we are thus driven to the conclusion that this condition is only to be explained by attributing it to the *concurrent relaxation and extension of the capsular ligament from accumulation of fluid, and to the relaxation of the muscles.*" (p. 141.)

The characteristics by which hip-disease is distinguished from other affections, such as nervous pain in the hip, congenital luxation, &c., are well treated. Two cases, says Professor Chelius, "have I seen of congenital luxation of one thigh-bone only, which were actually mistaken and treated as hip-disease." If the symptoms were as clearly marked as in a case of this singular congenital affection which we lately witnessed, in which both joints were dislocated, we should judge that the practitioners in question could have been but ill acquainted with the anatomy of the parts in their normal state, or with the ordinary symptoms of hip-disease. Our author's experience as regards the ordinary course of these affections does not differ from that of others who have possessed similar opportunities of witnessing its ravages: "the prognosis," he observes, "is always unfavorable, but especially so when the mischief has its origin in the ligaments or synovial membrane; in the earliest period only is a perfect cure possible." The treatment recommended is simple and sound.

*Tetanus.* In turning to the subject of Tetanus, we find the following observations on its origin, or rather its proximate cause:

"It is most probable that the immediate cause of tetanus is an inflammatory condition of the nervous system; at least post-mortem examinations have proved the existence of inflammation in the nerves and their sheaths, of the spinal cord and brain, with serous effusion between their tunics. The spinal marrow seems to be specially affected; and even where the indications of inflammation are not pronounced, there are evidences of irritation and congestion. I found in one case the most unequivocal signs of inflammation in the medulla spinalis, the structure of which was broken down and reduced to a pulpy condition for the space of an inch." (pp. 237-8.)

We have been less fortunate in our examinations. The remedies enumerated for this intractable affection are, bleeding, the exhibition of mercury in combination with opium or morphine, mercurial infriktion and warm bathing. The cold bath is admissible in the earliest stage only; cupping-glasses, along the spine, combined with general bloodletting our author thinks the most applicable treatment where the patient is young and robust, and the spasms severe; more especially if inflammatory fever be present. We quite agree in a further remark upon the value of opium in this affection; and in the feasibility of administering large doses (of several grains) without producing narcotism.

*Wounds of the head.* The section on "wounds in particular" is introduced by a chapter on "Injuries of the Head;" in which the various textures and parts obnoxious to external violence are brought under notice, together with the injuries to which they are severally liable: on the details of this chapter we shall make two or three remarks. Wounds of the textures superficial to the skull our author divides into four classes:



those affecting the scalp alone, or extending to the aponeurosis, muscles, and pericranium. We first have some practical remarks on the disproportioned mischief which is not unfrequently observed as the result of wounds (especially punctured wounds) involving the aponeurosis and pericranium; the history of these cases (most commonly occurring in full-blooded and intemperate individuals) being, that inflammation is set up in the fibrous tissues included in the injury, which runs a rapid course and terminates in suppuration and death of the parts affected. The concomitant symptoms require often active antiphlogistic treatment, though the extent to which this is to be carried requires great discrimination on the part of the practitioner,—at least such is the case in our London hospital practice; and the indiscriminate employment of *cold* lotions to the head is to be deprecated; indeed there are few instances (where lotions are indicated,) in which the *tepid* application is not more agreeable to the patient, whilst it is equally efficacious and attended with less risk. With the closing remarks on the treatment of these injuries we entirely coincide, viz.: “that the safest course to avoid the most dreaded results is to make an early (and free) incision into the swelling, and thus give a ready exit to the collected fluid and dead cellular tissue.”

Our author's treatment of “scalping” wounds of the head is, according to our experience (as a general practice) unnecessarily interfering. Sutures ought never to be employed when they can possibly be dispensed with; and the dressing should be as light and unincumbered as possible; charpie, compresses, and bandages are rarely required, and generally mischievous. Again, in the more serious question of the use of the trephine, we cannot agree in the general principles which are to guide the practitioner; and we are rather surprised that the experience of so cautious a surgeon should have conducted him to such results. The following are some of the Professor's remarks upon the subject:

“Fractures of the skull with depression call for the employment of the trephine on the spot, even in the absence of any symptom of compression or irritation of the brain. Such symptoms declare themselves sooner or later, and then the operation will be no longer of any avail. . . . When the condition of the wound is such as to admit of a ready removal of the splinters or shattered fragments of bone, and of a free escape for the extravasation, then only may trephining be regarded as superfluous. . . . By very great violence the sutures of the skull may be separated. If the surgeon has satisfied himself by extension of the wound and the requisite incisions that such is the case, and that the separation in question is not sufficient to permit a ready exit to the secretions from both sides, he should trephine. . . . If injuries to the skull (produced by great external force, such as fire-arms, &c.,) are attended with splintering of the bone, if the diploe is pressed upon, the outer table fractured, and the inner splintered, or where there is depression of fragments of bone, the trephine must be immediately had recourse to.” (pp. 249 et seq.)

We shall make one more quotation on this subject, from the chapter on “Inflammation of the brain.” After describing the symptoms and treatment of this condition in its earlier stages, Professor Chelius remarks:

“When the symptoms of suppuration (of the brain) have become evident, the prognosis is very bad; and the only chance of rescuing the patient is the speedy employment of the trephine on the spot where the pain or inflammation was first complained of, and in so doing, if the suppuration have extended itself, it will

usually be found necessary to apply the trephine at several points, and to divide the dura mater, and cut into the surface of the brain itself, when the position of the collected matter calls for it." (p. 256.)

The Professor justly adds that, where the pus is diffused, either over the surface or between the dura mater and skull, the operation will prove entirely useless; and that even when the dura mater is divided it is by no means easy to diagnosticate the exact locality of the abscess which is supposed to exist in the brain. It is not our intention to comment on the practice advocated in the above quotations, but merely to remark that it differs importantly from our own modern practice in England.

*Fractures.* We shall lastly select the section on "Fractures in general" for notice, and with this close our present brief review. After enumerating the different forms of fracture to which bones are obnoxious, our author proceeds to comment on the relative liability to these injuries at different ages and under different circumstances. The occurrence of fracture from comparatively slight causes in the old, and under different predisposing forms of disease, he attributes to the disproportion which the process of deposit holds to that of absorption, by which the resistance of the texture is weakened. On this subject our author subsequently avails himself of his French translator's note, from which we also extract the following observations:

"The compact tissue of the shafts of long bones is closer and more solid in the old than in the growing; it rings when struck, and is hard and difficult to break. It is true that the caliber of the medullary canal is augmented, but this is exclusively at the expense of the inner spongy laminae, which have nearly altogether disappeared. But near the extremities of the cylindrical bones an increased absorption may be remarked, by which the substance of the bones at these parts loses in thickness; the spongy tissue presents larger cancelli, especially in the neighbourhood of the medullary canal, which thus appears continued into the extremity of the long bones. This difference indicates why the porosity of the ends of cylindrical bones in the aged has more influence on their fragility than the lack of elasticity in their shafts, which is moreover counterbalanced by their greater compactness. Thence it arises that fracture of the extremities of the cylindrical bones in the old, (especially of the neck of the femur,) is very frequent, whilst that of the shaft is even more rare than in the growing." (p. 345.)

The following are enumerated as the symptoms by which the existence of fracture may be determined: by the altered form and direction of the limb; by its length, thickness, and straight bearing, as well as by the disturbed function, unnatural mobility and crepitation of the injured member. In connexion with this last means of *diagnosis* our author notices Lisfranc's recommendation that the aid of the stethoscope should be called in, (of course he presupposes the ability of the surgeon to use it;) but dryly adds that when crepitus is present, it may be always as readily detected without the aid of this instrument: we may ourselves add that, if the sense of touch fail to distinguish between the crepitus of fracture and of effusion, it will be vain to seek a solution of the difficulty by the aid of the ear. The *prognosis* in cases of severe fracture, as determining the course of practice to be pursued, often involves the alternative of loss of life or limb; and it is therefore of the utmost importance to bring all the information we can collect to bear upon this momentous question. Amongst the several points enumerated by Professor Chelius as influencing the prog-

nosis, he mentions the behaviour (Betragen) of the patient during the cure. Whether he means to include under this head the general *moral* tone and temper of the sufferer we do not clearly understand; but certain we are that this ought to have a very great weight with the practitioner, and may even be of sufficient importance alone (other points being equally balanced) to determine him in sacrificing or saving a limb. It has repeatedly occurred to us to witness in hospital practice the most frightful injuries recovered from, with scarcely the interruption of a bad symptom, where the temper and general *morale* of the patient is equal and calm, whilst the converse holds equally true: this is also especially remarkable after severe operations. In the directions that follow on the subject of "extension, counter-extension, coaptation," and the mode of putting up fractures, our author puts us in mind of the formal directions given by some of our older authorities; and we cannot quite agree with him in some of the details of his practice. The employment of a compress over the seat of fracture is in our opinion rarely useful and often mischievous: and again, the direction to place the limb in a straight position when the fracture extends through the middle of the cylindrical bones (p. 352) is by no means to be acted on as a general rule; at least such is the result of our own experience. A little further on active antiphlogistic treatment is spoken of (bloodletting, leeches, &c.) as occasionally required after severe fracture; this may be admissible or even requisite, though very rarely, in the full-blooded healthy countryman, but the exceptions are extremely rare when such practice could be adopted without extreme risk in London practice. In speaking of wounded blood-vessels associated with fracture, our author recommends the practice of cutting down upon them and tying them; or where that is impracticable, he adds, that the trunk of the artery must be sought and tied above the seat of injury, (p. 355.) This will be found more difficult in practice and dangerous in its results than it might appear in theory, and can rarely be acted on: the limb must generally be sacrificed in time to save the patient from the death which awaits him either from secondary hemorrhage, or gangrene consequent on deficient supply of blood. Professor Chelius seems fully alive to the value of opium in the treatment of nervous delirium following severe injuries to the bones; and also admits the propriety of not cutting off all supply of stimulus from those who have been accustomed to it: this last often proves our sheet anchor in the treatment of these troublesome cases, where a tendency to nervous delirium exhibits itself soon after the accident. The conclusion of the present section is occupied with the treatment of badly-united fracture, by the operation of re-breaking them; we cannot say that our personal experience affords us any commentary upon this practice; we therefore only quote our author's observations which are derived principally from Oesterlen's experiments, which were published some years since.

"Where the union of a fractured bone is so bad as to materially curtail its usefulness and be a source of suffering to the patient; and when extension and bandaging are no longer of any avail, and the patient is neither too old nor weak, nor the subject of phthisis, gout, &c., the bone may be again fractured in the callus with the most happy results. No general rule can be laid down respecting the period to which this operation may extend: it must depend upon the condition of the patient, the nature and seat of the fracture, and the state of the callus.

Oesterlen's observations prove that the operation has succeeded in the thigh and leg after the lapse of seventeen weeks; and some of his experiments on adults succeeded as late as the twenty-sixth week. In young subjects, and where the bones are not very strong, as in the forearm, the refracture through the callus has been effected as late as at the end of a year, especially when the callus is not very thick. If the callus be recent and moderate in quantity, the operation in question may be accomplished by the hand alone; otherwise the assistance of a machine constructed for the purpose is required." (p. 359.)

We shall here bring our observations to a close; and in summing up we feel called upon to make a few parting observations for a reason adverted to in the commencement of the present article, and which we deem necessary, as our readers would perhaps find it difficult to gather them from the quotations we have made from the sections which have been selected as best adapted to illustrate the general principles and qualities of the work before us. We cannot help remarking a disproportion in the treatment of the more important and trivial subjects; this observation is, however, more applicable to the detail than to the general handling of the subjects; we should have been better pleased to have seen points of minor importance thrown more into the background, and those of greater moment brought more prominently into relief: i. e. for the sake of the student who has not yet learned to make this distinction for himself. In the same category of faults (for such they are in a *Manual*), we may notice that it is difficult in some instances to judge of the frequency of the occurrence of certain rare symptoms in a disease, or of the necessity for peculiar or unusual forms of treatment. The local treatment of some injuries, as well as diseases, is unnecessarily encumbered and complex; and many casual remarks prove their author to be a *little* behind his brethren, in Germany as well as in England, both in theory and practice; probably this may arise from the learned Professor being less conversant with men than with books. The reading and research evinced are very great, and render the treatise valuable as a work of reference. The above criticisms are, however, in the main applicable to faults of minor importance; and may (as we doubt not they will) be corrected in the forthcoming English translation. The general character of the work leaves us no room to doubt that Professor Chelius fully merits the high reputation he possesses as a practical teacher and a good surgeon; and the more careful analysis which we have bestowed on the volume before us only leads us to a recapitulation of the opinion with which we commenced our review,—that we can conscientiously recommend the work as a safe guide in practice, and as fully deserving the confidence of the professional public.

Since writing the above we have received the first 'Part' of Mr. South's promised translation of our author. The 'conditions' of publication include the completion of the work in twelve monthly parts, forming two octavo volumes; from this we infer that the annotations (which in bulk considerably exceed the text) will not be quite so extended in the succeeding numbers, or we very much question the practicability of fulfilling this engagement which the editor volunteers to make with the public. The contents of the present part consist of 'Inflammation' generally and specially considered, together with its terminations or proximate conse-

quences: 'Erysipelas' constitutes the second section; and the chapter on 'Burns' is commenced.

It is not our intention at present critically to analyse Mr. South's labours; but we should be guilty of an injustice to him and to our readers if we did not cordially recommend his work as having fair promise of forming, what it is the translator's ambition it should be, a sound and comprehensive system of practical surgery. The notes and text are so intermingled as to render it continuously readable, without presenting those abrupt transitions which are so disagreeable in many works similarly arranged. The faults of omission, &c. at which we have hinted in our comments on the first chapter of our author's work, (viz. that on 'inflammation,') have been amply compensated by the copious and excellent digest of his translator and annotator, who is justly proud of availing himself of the labours of our own countrymen in this department of pathology, whilst he gives their due meed of notice and respect to the contributions of our continental brethren. The references which are given to original works have evidently been carefully collated, and will be found of great value to the student and practitioner, who may wish for more copious information on any particular branch of surgery; and the practical remarks and illustrations with which the work abounds are a good guarantee of the translator's ability to do justice to his task, at the same time that they prove that Mr. South has not failed to avail himself industriously of the large opportunities which his hospital appointment has afforded him. We could have wished that the translation had been rather less literal and cramped in style, which might have been done without any sacrifice, and with very little additional trouble: we should then have been spared the frequent repetition of the expression 'and so on' (und so weiter), together with other Germanisms which do not sound well in English. We would also recommend that some self-denial be exercised in the introduction of cases; and that those which are inserted be as much abridged as is compatible with their application to the subject which they are designed to elucidate. On the whole, Professor Chelius has, we think, ample reason to be satisfied, thus far, with the English garb and deckings of his offspring; and, for our part, we are only surprised that a surgeon with the resources which Mr. South appears to possess, should not have preferred the paternity of an original work, to the adoption of that of another. But such are the peculiarities of different minds, that some men can best mould from the rough clay, whilst others prefer working up into their own taste and fashion the model which has been prepared for them.

As the present work is to appear periodically, we may take the opportunity of expressing a hope that Mr. South will redeem that part of his pledge, by which he engages that a number shall appear on the first of every month; and thus set an example to other editors and authors, the conduct of many of whom, in this respect, cannot be too strongly reprobated. To inveigle the public by the bait of fair promises, and then, when fairly hooked, to neglect them, play with them, or fairly turn them adrift, is a species of literary delinquency with which we have no patience; but we expect better things of Mr. South.

## ART. IX.

*The Actual Process of Nutrition and Inflammation in the Living Structure, demonstrated by the Microscope.* PART II. By WILLIAM ADDISON, F.L.S. &c.—London, 1845. 8vo, pp. 114. With Two Plates.

MR. ADDISON'S industry as an observer has furnished in this memoir a large number of new facts, corroborative of his former statements; and our estimate of their value, joined to our respect for himself, induce us to bring them again under the notice of our readers. But we feel obliged to state, at the same time, that our conviction as to the fundamental errors of his reasoning upon these facts, remains unchanged; and that, if such reasoning be admitted in physiology, it can never, in our apprehension, attain the rank of an exact science. Hence we feel bound to put our readers on their guard against these errors; by entering into a more detailed examination of them than we should deem necessary, if they were less connected with important truths, or came forth to the world with less pretension.

We believe that he is fully justified in stating as he does, that "the accumulation of the colourless cells of blood in irritated and inflamed textures, and the existence of active molecules in the interior of the cells of blood, saliva, and pus, have become established physiological facts." But we cannot regard this or any similar fact as "establishing the identity of the cells of mucus, pus, and lymph, with the colourless cells circulating in the blood;" any more than it establishes their identity with those numerous cells of other kinds, which exhibit similar phenomena. And although Mr. Addison expresses himself (p. 13) as "at a loss to understand what amount of evidence upon this point will be considered satisfactory," if this identity be not admitted upon the grounds he has stated, we cannot see how any unprejudiced physiologist, who is acquainted with the general doctrines of cell-life, can feel any difficulty in the matter. The evidence required is simply, that Mr. Addison should trace the passage of a colourless corpuscle of the blood, through the parietes of the blood-vessels, through the intervening tissue, and through the basement-membrane of the mucous surface, before he expects the world to believe that a cell previously floating in the circulating fluid is cast off as an epithelium-cell from the excreting surface.

The first series of facts (chapter 1) relates to the existence of *moving molecules* in the interior of cells. These have been observed by Mr. Addison in the colourless cells of the blood, taken from a swelled leg, and from the red patches of erythema nodosum (in which there were nearly as many colourless as red corpuscles;) in the similar cells of a large bulla, resembling that of pemphigus; in the cells contained in a transparent fluid, which oozed from the red shining surface of a nævus on the forehead; that had been irritated by stimulating applications; in the lymph- and pus-cells of herpes labialis; in the pus-cells of porrigo scutellata; in the blood and pus of an ulcerated leg; in the cells of a muco-purulent vaginal discharge; in the pus-cells of the eruption produced by tartar-emetic ointment; and in the cells of the saliva and nasal mucus. The following observation has an interesting relation to Mr. Addison's former statements, with regard to the origin of the fibrinous network of the blood in the contents of its colourless cells. It relates to the bulla just referred to; the covering of which

was tense, thin, and shining, without any redness in the surrounding integument.

"I punctured the vesicle with a point of a lancet; and instead of its discharging its contents and collapsing, as I expected, only a small drop of perfectly transparent and limpid fluid flowed out. In this fluid I found several corpuscles or cells; some were evidently red blood-cells; others resembled, and in my opinion were, colourless blood-cells. There were, besides, sundry other forms of cells, some entire, others flattened, and altered in form, having numerous filaments of the utmost degree of tenuity attached to them. All the colourless cells were more or less entirely filled with the most minute molecules; and there were several little masses and congregated groups of isolated molecules attached to each other by long and delicate filaments. Some of the cells were actually discharging molecules; and others had filaments so attached to them, as to appear as if clothed with cilia. There were also several fibrillated networks, composed of filaments, molecules, and corpuscles; and here and there perfect but small epithelial-cells. I now snipped off the point of the vesicle with a pair of scissors, and yet it did not discharge the whole of its fluid. This was explained, when on examining the portion removed by the microscope, it was found to consist of a most intricate network of fibrinous filaments, which ramified through the whole interior of the vesicle, and retained the fluid in its meshes." (p. 5.)

In chapter II we find some observations "On the transformation of pus-cells into a mucous or fibrous tissue, and tubercle; on the fibrous tissue of saliva; and on the coagulation of the blood." These confirm Mr. Addison's former statements as to the rupture of the pus-cells by liquor potassæ, and the consequent formation of a consistent coagulum, which, when treated by dilute acetic acid, assumes the characters of a distinct and coherent fibrous membrane. "The fibrous tissue here formed by my manipulations," he says, (p. 17,) "could not, by any visible or microscopical character be distinguished from that formed by the fibrillation of the buffy layer of the blood, or by the process of nutrition in the living body." We must take leave to express a doubt, however, whether the fibrous appearance was not partly due to the manipulations; which, as every microscopist knows, may give a fibrous appearance to a perfectly homogeneous structure. The following are Mr. Addison's inferences from this fact.

"It is evident that, in this experiment, the plasticity of the resulting material arises from the rupture of the cells. The fluid element of pus, before this event, is limpid; that is, it has no plastic quality or tenacity whatever; it drops from one vessel into another like water; but when a majority of the cells have been ruptured, and their contents mingled with the previously existing fluid, then the whole becomes extremely plastic and coherent; it will no longer drop from one vessel to another, and it exhibits all the microscopical appearances of fibrous tissue or of mucus. The event, therefore, accompanying or preceding this transformation, is the rupture of the pus cells; and the result is a mucous or fibrous tissue." (p. 18.)

It is upon these and similar facts, that Mr. Addison founds his argument as to the *identity* of pus-cells with the white corpuscles of the blood. But they appear to us far from warranting the assumption. According to Mr. Addison's own showing, the white corpuscles of the blood and lymph burst, and emit their coagulable fluid, *of their own accord*; whilst the pus-cells do this only when under the influence of liquor potassæ. Now that the liquor potassæ in this case acts, not only in causing the rupture of the cells (which seems to be Mr. Addison's doctrine,) but also in altering the

chemical and physical properties of their contents, must be admitted, we think, to be a far from improbable supposition. At any rate, the contrary has not been proved; and this argument for identity, therefore, completely falls to the ground.

In another experiment, Mr. Addison describes the formation, by the admixture of a few drops of pus and of liquor potassæ, and by subsequent manipulation, of a "delicate, thin transparent, and highly-elastic fibrous membrane, exactly resembling some of the thin transparent membranes of the embryo, except in the presence of blood-vessels, or the structureless basement-membrane of Mr. Bowman." Further on, we find, that if saliva be treated with dilute acetic acid, the coagulum exhibits a distinct and well-defined fibrous structure, (in regard to which, however, we must make the same remark as before;) so that every drop of saliva contains a form of plastic matter, the existence of which may be made visible by dilute acetic acid; doubtless on account of some chemical change which that agent produces in it.

By submitting the fibrous coagula of pus, obtained through the operation of liquor potassæ, to the prolonged agency of dilute acetic acid, they were changed into an "opaque, white, friable substance, resembling tubercle." The same result was obtained when the pus was first diluted with blood-serum; the first result of the treatment by liquor potassæ was to form a transparent plastic mass, which became white and opaque when immersed in dilute acetic acid; this having been washed well in water, and rolled on blotting paper to remove superfluous moisture, its weight was  $14\frac{1}{2}$  grains, (being that of the pus + the albuminous constituent of the serum employed;) but moisture continued exuding from it, and at the end of three hours it weighed 10 grains. "A small portion, examined by the microscope, exhibited numerous pus-cells still entire, amorphous granular matter, and myriads of molecules; it had the physical properties, visible appearance, and microscopical character of pulmonary tubercles." (p. 28.) These experiments are additional proofs of the close relation which subsists between the plastic element of the blood and the elements of pus and tubercle; but we do not see that they add much to our knowledge of the exact nature of that relation, since we have no reason to think that the process of transformation, by the agency of liquor potassæ and acetic acid, is *identical* with that which takes place in the living body, but only that it bears a certain degree of *analogy* to it.

In the following conclusions, deduced by Mr. Addison from his experiments, we believe that we may generally concur:

"It appears to me, then, to be demonstrable from my experiments, that the colourless elements or cells of the blood spontaneously transform themselves into an elastic fibrous tissue, after their separation from the living structure; into a plastic transparent mucus (another form of fibrous tissue,) when treated with liquor potassæ; and into flocculi, flakes, and tubercle-like matter, when acted on by water or acetic acid.

"It appears to me also to be demonstrable from my experiments, that a similar fibrous tissue (?) and tubercular matter may be formed by the disintegration of pus-cells, and by treating the saliva with acetic acid or alcohol.

"The fibrous tissues from these sources appear to have mechanical properties, a physical character and texture, a microscopical or visible appearance, and a chemical composition, so closely allied to the fibrous tissues and membranes formed by the



process of nutrition in the living structure, as to leave no reasonable ground for doubting, that the latter result from the transformation or disintegration of cells.

"If so, then it appears to me to follow as an inevitable conclusion, that there is no such thing in the living organism as a membrane secreting mucus, (taking the ordinary meaning attached to the word secreting;) no such thing as an expanse of fibrous or any other tissue so changing the nature or character of fluids as they filter or transude through its fabric, that the fluid of the blood on one side becomes mucus by merely passing through it to the other; on the contrary, it appears to me that we can no longer hesitate to admit, that mucus, whether conformable to the type of a normal nutrition, or departing from it so as to constitute an abnormal or diseased element, can exist only in virtue of the life of the cells." (p. 38.)

We quote these conclusions, not as being particularly new, (for they have been, in more general terms, set forth in our own pages,) but because they are expressed by Mr. Addison with much clearness and force, as independent deductions from his own experiments. We need not, however, go along with him in his subsequent inquiry, as to whether the secreting cells are "generated in the tissue, or are ulterior forms of blood-cells;" because he adduces no new facts in support of his position, which we have already shown to be quite unsupported by his own observations, and irreconcilable with those of others. We may concisely state Mr. Addison's views to be, that the colourless corpuscles of the blood are the sole agents in nutrition and secretion; that in normal nutrition, the colourless blood-corpuscles adhere to the tissue forming the boundary of the blood-channels; that they pass into and contribute to form the tissue (the parietes of the capillaries;) that they are afterwards evolved or thrown off from the nearest free surface, a follicle, crypt, or duct; and that the epithelial scales and the mucus, or the secretions flowing from the follicles or ducts, are the result of the dissolution of the cells and tissues. We have pointed out on a former occasion, the complete absence of the *kind* of evidence, required to support a proposition so extraordinary, as the passage of any one floating cell, (let alone a vast multitude,) from the interior of the blood-channel to even the nearest mucous surface; opposed as such a passage is, by the septum formed by the basement membrane, which has certainly no apertures in it large enough to allow these cells to pass, and which is certainly not itself formed of coalesced cells about to resolve themselves into epithelium. Moreover, on the surface of this membrane, and within the extremities of glandular follicles, the progressive development of cells from nuclei has been distinctly traced; proving that the cells do not come forth from the subjacent tissues already formed, but are developed in the very part, from which they are afterwards to be thrown out. We might advert to numerous other arguments in opposition to Mr. Addison's views; but many of these are so palpable, that we shall not do our readers the injustice to suppose that they require to have them suggested. Mr. Addison rejects, as unfounded dogmata, the assertions of those, who state that the cells of pus, fibrinous exudations, &c., are formed in the fluids *after* it has left the blood-vessels; preferring to think that they have passed *bodily* out of the vessels, to the surface on which they are found. Now surely the *onus probandi* rests with Mr. Addison; since all that we *know* of the nature of the walls of the blood-vessels opposes the supposition which he has formed, in regard to the constant interchange of full-grown cells between their interior and exterior surfaces.

We think it not so improbable, however, that there is such an inter-

change in regard to the *cell-germs*, or *molecules*, which are set free by the rupture of the white corpuscles. The membrane lining the blood-vessels has been seen, in many instances, to be composed of *coalesced granules*; and granular spots have been seen in the basement-membrane of mucous surfaces and follicles, apparently furnishing the germs from which the epithelium-cells are formed. Our notion of the act of nutrition and secretion, therefore, admits the possibility, that the pus and epithelium-cells, as well as the cells of the solid tissues, may have had the colourless corpuscles for their *parents*; although we do not as yet see any distinct proof of the fact.

In the third chapter of Mr. Addison's *Researches*, "The structure and functions of the kidney" are professedly considered, with reference to the nature of the fluid element of blood; Mr. Bowman's recent anatomical investigations being taken as the groundwork of his views. We have been able to find very little in it, however, respecting the functions of the kidney; in fact Mr. Addison's views with regard to the relative *products* of the Malpighian capillaries, and of those which surround the uriniferous tubes, appear to us to correspond precisely with those first suggested by Mr. Bowman, and received by other physiologists. But he seems to consider the fact, that a watery fluid, containing little else than saline matter, is filtered off (as it were) through the capillaries of the Malpighian tufts, as a demonstration of his position, that the *fluid* element of the circulating blood does not contain either fibrine or albumen, but consists merely of water holding the saline matter in solution. He argues that we have no reason to regard the walls of these vessels as having the power of *selection*, allowing some of the saline matter of the blood to pass, but keeping back the organic substances also dissolved in it; this power of selection being an attribute of cells only. He does not seem to be aware, however, that recent experiments have shown that dead animal membranes, such as the pleura and peritoneum, *do* possess this very power; separating, as it were, the serum of the blood into its two constituents, saline and albuminous fluids, by allowing the former to pass, whilst the latter is kept back. Hence Mr. Addison's argument falls entirely to the ground.

This chapter contains, a number of other arguments bearing on the same subject; in which, however, we find little that is new, and still less that is good. Mr. Addison objects to some of our former criticisms upon his reasoning; but we do not see that he invalidates the facts upon which our objections were based. For instance, we objected to his drawing inferences from the process of nutrition in foetal structures, because there are in them (as in the lowest forms of animal life) no proper vessels, but only intercellular passages; to which Mr. Addison contents himself with replying, that as "some of the best energies of physiologists have been occupied in tracing out and establishing a wonderful analogy in the elementary tissues and mode of growth of nutrition in all living structures," we propose to depart from those general principles, by "*assuming* differences, where most probably, if the analogies in all living structures be true, there are none." Now we take leave to think, that we are as competent to judge of the real nature of these analogies as Mr. Addison; our chief attention, for many years past, having been given to the search for them; and we venture to say that there is no analogy that can upset the *fact*, upon which we rested our objection, that there is an important difference

between embryonic and adult structures, in regard to the relation between the solids and fluids, which must prevent us from applying to the latter all the inferences that may be founded upon the former. Mr. Addison can scarcely deny, that in the lowest plants and animals, as in the early embryonic condition of the higher, no vessels at all exist; and that there must therefore be in *them* a condition of the nutritive function essentially distinct from that under which this function takes place in the higher adult structures, although the function itself remains fundamentally the same. Again, if the early condition of the blood-channels be mere intercellular passages, not lined by a membrane (a *fact* which it is for Mr. Addison to disprove, if he can), it is reasonable to suppose that there may be conditions of the nutritive action in the tissues which they permeate, different from those which prevail in the adult tissues, in which the capillaries have distinct membranous walls; and that the fact, if fact it be, of the incorporation of the corpuscles floating in the blood, with the tissues in absolute contact with the fluid, does not justify the assumption that such incorporation can take place, when the blood and the tissues are separated by a membrane, that seems totally impermeable to any particles of appreciable size. We are not prepared to deny the *possibility*, that in the *embryonic* condition of tissues, the floating cells of the blood *may* become withdrawn from the blood, and incorporated with the solids; but *if* this takes place, it can be only so long as these solid tissues are themselves evidently composed of cells, or of simple transformations of them; and when they have departed more widely from that type, and the capillaries have acquired distinct membranous walls, we take leave to think that the passage of bodies so large as the colourless corpuscles through those walls is a phenomenon of not very likely occurrence. At any rate, we do not find a single observation of Mr. Addison's, which is not perfectly reconcilable with our own view, that it is the *contents* of the colourless corpuscles, not those bodies themselves, which find their way through the parietes of the vessels.

The last chapter, although entitled a "Demonstration of the phenomena and results of Inflammation," is very far from being such; its account of the process being very imperfect, and being as far from deserving the character of a *demonstration*, as is the account of the process of normal nutrition, which we have already criticised. We have so recently expressed our views on this subject, that we need not here go over the ground again; particularly as we find nothing in Mr. Addison's *observations* that is not in perfect harmony with them, although his *inferences* are widely different from ours. Here and elsewhere he disputes our position, that an increased production of colourless corpuscles takes place in the circulating current during the inflammatory action; and thinks that the large amount seen in the irritated vessels of a frog's foot is due, not to any additional number in the entire mass of blood, but to the determination of those existing in the whole current towards the particular spot. Now this may be, and very probably is, the fact in the case in question; but we grounded our statement, not upon the large proportion of white corpuscles in the vessels of an *inflamed* part, but in the great increase in the whole mass of the circulating fluid,—provided the inflammation has been sufficiently acute and extensive,—as proved by their unusual abundance in blood drawn from a *remote* part. We do not think that Mr. Addison can reason fairly

on this point, from the phenomena of inflammation in cold-blooded animals; since it is well known, that this process rarely if ever presents itself in these, in its most acute form,—the suppurative. Mr. Addison thinks that all the colourless corpuscles in the blood are directly furnished by the chyle; and seems to take no account of the molecules, which are set free by their rupture. Now the increase we have just alluded to, seems to prove the fact of their self-generating power; the existence of which we might have inferred from their character as *cells*. And it cannot be thought unreasonable to infer, that this power should be exercised as it is in the analogous cells of the lower cryptogamia; which propagate by the rupture of the parent, and the development of the contained granules into cells. Various recent observations, especially those of Mr. Macleod (see Br. and For. Med. Rev. vol. XIX, p. 565), indicate the existence of a similar process in the cell-development of animals; and although we may freely admit that no one has yet watched the development of cells in an exuded blastema, and that the process is somewhat hypothetical, yet we think our readers will agree with us in regarding Mr. Addison's notion of the passage of the white corpuscles themselves into the exudation, as still more hypothetical. The former view is supported by many analogies, —e.g. the development of the epidermic cells, which *has been studied*. The latter appears to us plainly contradicted by known facts.

We now again take leave of Mr. Addison; thanking him most heartily, in the name of the profession, and in our own, for the large number of valuable facts which he has contributed; but strongly urging him to reconsider his *inferences*, which, so far as we know, have not been thought worthy of adoption by a single Physiologist of any note.

#### ART. X.

*The General Nature and Treatment of Tumours.* By GEORGE MACILWAIN, Fellow of the Royal College of Surgeons of England, &c. &c.—London, 1845. 8vo, pp. 220.

MR. MACILWAIN states in his preface the object and plan of his work. He has endeavoured to *sketch* the principles and the application of what he calls "Organic Surgery," to the treatment of tumours. The plan pursued, he observes, is very simple. He has endeavoured to give:—1. A general idea of the nature of tumours. 2. To impress on the practitioner's mind that they must be the result of the actions of one or more of the various organs, on the materials subjected to them. 3. That if the result be unhealthy, the action in a practical sense must be unhealthy also. 4. That in discovering the organ or organs at fault, we must be careful to distinguish health from disease. 5. That, to ascertain the causes of the latter, we must enlarge our investigation. 6. He has suggested the manner; adding "hints" on the treatment of different organs. Lastly. He has offered, as illustrations, a *few* of the results he has already obtained.

We will begin with the practical results of the treatment, and then notice the theories upon which it is founded. The tendency of the plan of treatment in the words of the author, as a whole, is to improve the general condition of the body, and therefore if it procure not the absorption of a tu-

mour, it can by no perceptible possibility do mischief. It proposes no new system, it acts on no new system, it rests on no new hypothesis, it takes the facts as they exist already, &c. ; all which we are bound to say is most true. The book is simply a laboured attempt to give an air of novelty to "the principles I imbibed from Mr. Abernethy." In the following case of a lady, Mr. Macilwain shall speak for himself, and as there was no "one function in her whole body going rightly, except the kidney," it may be considered as the fairest possible example of his plan of treatment.

"A lady, ætat. 39, consulted me for a tumour of the breast, under circumstances that were as hopeless as it is possible to imagine ; and it is a very good case, so far as showing what may be done where there is organic disease.

"She had had the tumour for some years ; and I found, in my notes of the first conversation with me, that she had consulted four surgeons, three of them men of great eminence in London ; besides some physicians ; and that they had—some more, some less strongly—urged its removal. To this she would not consent. On examining her breast, I found that which was described in my notes at the time, as 'true specimen of carcinoma,' very hard, and adherent to the subjacent parts. The skin is tucked in at the nipple, and a dark spot there, slightly abraded. It is painful, with a 'sense of drawing.' Arm swollen, and red in the vicinity of the tumour. There issues from the dark spot a few drops of blood daily, which began when she made use of, as she believes, some irritating application.

"In this lady I could not find any one function in her whole body going rightly, except the kidney, and that was only from her own report ; and yet I could find nothing unusual in her habits, except that from about the age of 20, previously to which she had been very active, her habits had become sedentary, catamenia were scanty and pale, and never lasting more than a day ; liver extremely torpid, skin chilly, bowels habitually costive, appetite deficient. She had a number of other symptoms, such as frequent palpitations ; but, as she called on me, I did not examine the condition of the abdomen until I visited her, when I found the liver hard and enlarged. Her tongue was very peculiar ; I never remember to have seen any like it in a living person ; it was shrivelled and pale, covered with a remarkably thick coating of something that I never saw before, but not unlike the tongue that you sometimes see after death in advanced stages of putrefaction. She knew perfectly well that there was no chance of cure ; but as she suffered greatly, and seemed willing to do anything that was recommended, I did everything I could to persuade her to be careful ; assuring her that, although we did not allow ourselves to talk of curing such diseases as that she laboured under, yet they were far from being beyond the control of treatment altogether ; that a careful mode of life, adapted to the peculiar fault in the organs, was often rewarded by an almost entire immunity from pain, and a stationary condition of the tumour ; and that I should not despair of accomplishing something in her case ; not, said I, so much from any *peculiarity* of plan, as that I cannot glean from you that any very particular attention has at any time been paid to your diet and mode of life, by which alone your organs can be got into better condition. Well, we set to work, and before she had been three weeks on the plan, she said that the tumour had not been so easy for twelve preceding months. For the treatment, so far as I directed it, consisted of very plain diet, the rigid exclusion of sugar, and grease of all kind—friction to the skin—with especial avoidance generally of any in the neighbourhood of the tumour ; when the catamenia occurred, such as they were, a few leeches were ordered to be applied to the pubes on their cessation. Her medicines were chiefly aloe and ipecacuanha, with now and then three grains of calomel, so guarded as not to act too quickly ; but aloe and ipecacuanha were the medicines generally used. Now this case went on until the tumour had become decidedly loose, that is, more moveable, and the suffering from it very trivial ; it was now and then a little uncomfortable, but she was generally *easy*. Although she herself referred her uneasy moments to slight aberrations from the plan, still she could

not help occasionally transgressing ; and an unfortunate consultation served only to render matters worse, in the following manner." (pp. 194-7.)

And then Mr. Macilwain states how an "eminent physician," called into consultation, told the patient she might eat what she pleased, and how the lady, acting on this opinion, was shortly "thrown into a state of terrible suffering," which opium failed to relieve, and which was only ameliorated by a return to the former plan. This poor daughter of Eve could not, however, with all this bitter experience, avoid tasting Mr. Macilwain's forbidden foods. "She frequently tampered with impunity ; but once too often," as he pathetically assures us, "and the result was what I have stated—she died in great agony." It was not the awful cancer, but (as Mr. Macilwain's rigid induction proves) the "tampering," that slew her.

The next case is that of a very hard tumour in the lip.

"A lady, about 34 years of age, had a very hard tumour in the centre and occupying about one third of the upper lip. It had a very firm and well-defined boundary, was of a circular form, and, though deeply imbedded in the substance of the part, was very moveable. The lower surface of the tumour was denuded of its integuments, presenting an excoriated rather than an ulcerated surface. She suffered considerable pain occasionally, and the denuded surface was exquisitely sensitive. Some months had elapsed since her attention had been first excited to it, and the tumour had gradually acquired its present characters. She appeared much out of health ; a bilious, dull, leaden complexion was accompanied by deficient appetite, irregular and painful menstruation, torpid bowels, cold skin, pain in the head, &c. Having carefully examined the case, I told her that I feared nothing could be of any service but the removal of the disease, and that I perfectly concurred in the advice given by Mr. Kingdon, viz. that so soon as her health was somewhat improved to allow him to remove it. Mr. Kingdon wished me to take an analytical account of her case, and try whether it were possible, by any measure, to influence the condition of the tumour. I, therefore, took down her case in the tabular form which I recommended ; and, on a careful review of the history and present phenomena, was led to regard the liver and uterus as the organs *primarily* and chiefly affected. Not to enter unnecessarily into details, I may briefly state that the organs to which my endeavours were directed were the liver, skin, and uterus. Her diet was simple and strictly defined, and she kept memoranda of the various articles of diet she employed, together with such other matters as I recommended, after the plan of which I have already spoken. The lip was to be kept still ; she was to speak as little as possible, and to take her food through the spout of a teapot. She was allowed to put a bread-and-water poultice to the lip at night, *when the tumour was painful*, and to defend it from the atmosphere in the day time by a little spermaceti ointment, applied warm, by means of a camel-hair brush. The medicines she took were aloe, antimony, or ipecacuanha, and confection of opium, in different modifications and doses, according to her condition, and now and then, but rarely, a single dose of calomel and confection of opium. Besides these, until the skin became more tractable (as I wished the kidney to be more liberal) I gave her nitrate of potash with sarsaparilla. She was to take daily exercise, and to have her skin well rubbed. She, also, in the course of the treatment, had a tartar emetic plaster applied to the pubes, which appeared an useful auxiliary in restoring a more healthy condition of the catamenia. The whole treatment lasted six months. At first her looks began to improve, then her functions to become more regular, and at length alterations were observed in the tumour, first a softening, and subsequently a diminution of its bulk. The absorption continued slowly but progressively, until the whole tumour had disappeared." (pp. 201-3.)

Mr. Macilwain recites other and similarly successful cases, and observes generally that he knows no form of [morbid] deposition, to which the

mode of treatment he advocates has been fairly applied which has not been influenced by it. Bronchocele, and "depositions of whose site there could be doubt as seated in the liver" have been thus influenced, the former when iodine had failed.

The local applications are classed under two heads: 1, "such as profess to excite actions in the part, and 2, such as are supposed to act by excluding such injurious influences from without as might impede or embarrass the salutary operations of nature." In the former Mr. Macilwain has little confidence: the judicious management of the latter is he thinks very important in most cases of tumour. He regards "extreme cleanliness, from use of tepid and sometimes cold water, with the careful defence of any accessible surface from acrid secretions by the interposition of spermaceti ointment, or any other mild oleaginous matter, as representing the principal benefits derivable from local measures."

We must now notice Mr. Macilwain's hypothetical notions.

According to Mr. Macilwain's idea, tumours "are not swellings, but consist of newly-deposited matter (in or on a part) which is in some sense or other unnatural. . . . All unnatural depositions result from the disturbance of the function of some organ or organs of the animal economy, and are to be treated by the correction of that function." It is now satisfactorily ascertained that hydatid tumours consist of parasitical animals, and of the morbid deposits they excite; these animals being not formed within the body, but entering into it from without as microscopic ova or otherwise, and in several instances making the circuit of the circulating system. We here more particularly refer to Klencke's researches. If these be correct, the inapplicability of Mr. Macilwain's hypothesis as a general principle is manifest. The histological anatomy of scirrhus and other forms of tumour is equally opposed to this doctrine, which is, in fact, the old notion of metastatic deposit tricked out by meager references to modern researches with which Mr. Macilwain is evidently but imperfectly acquainted, and with laments on "the hardship under which men labour who have little but their enthusiasm to cheer them on through the, alas, too lonely path of inductive inquiry."

According to Mr. Macilwain, it is indisputable that tumours represent some function, and "that inquiry into the nature of a tumour should always recognize the possibility of a relation existing between the chemical elements of the tumour, and an imperfect performance of some function dealing with such elements." The absurdity of this as applied to hydatid tumours is manifest. Mr. Macilwain, however, acknowledges that he has "not yet arrived at the ascertainment of such relation in the chemical sense," but he "believes" he is "approaching that point," and has "the highest hopes of still better things;" all which faith and hope evidently form a large proportion of Mr. Macilwain's inductive philosophy; unless there be among his "bulky manuscripts" a history of numerous chemical analyses.

The hypothetical doctrines of Mr. Macilwain necessarily lead him to such considerations as his limited ideas and knowledge will permit, of the various functions of organs, and their absolute and relative importance to the health in general and to tumours in particular. That he may be able more distinctly to note changes in function he adopts a formula of inves-

tigation, which he terms "a Table of Record," and which we doubt not would be found useful in practice if carefully used. The great difficulty in the use of such formulæ (more elaborate than that of Mr. Macilwain are to be found in French and German authors) is that they are only suited to clinical instruction. It is seldom that practitioners can spare the time necessary for the required investigations, and as seldom will the patient afford at once the time and the facilities for the manipulation of his person such a method demands for its completion. It is not sufficient that a mode of practice be *good*; it must also be practicable: the union of these two qualities are essential to success. Nothing is so easy as to lay down methods, nothing so difficult as to act up to them.

Mr. Macilwain proceeds to review the functions of the more important viscera. His hints on the management of the different organs are useful and practical; his dietetics, without presenting any novelty, are interesting, and show that, however fantastic his theories may be, he has the good sense and judgment to adapt them to a rational empiricism; of course there are no chemical analyses of the morbid secretions. We subjoin his own summary of his functional or organic dietetics.

"The following, then, are the chief points I desire to impress in the management of the stomach: 1. Moderation. 2. The exclusion of unnecessary variety at a single meal, or (during investigation) in a single day. 3. A careful adjustment of animal or farinaceous food *to the case*. 4. Extension of surface of the food by minute comminution or otherwise extreme division. 5. Avoidance of all interfering influences, whether indulgence in condiments or questionable habits, as snuffing, smoking, &c. 6. Determined exercise on foot, horseback, or by gestation. 7. The avoidance of hasty generalization; and until your plan is tolerably defined, desiring your patient to keep a book of diet; in order that you may test your selection, or that of your patient, in detail." (p. 109.)

These directions are excellent; and we believe that many practitioners would greatly improve their practice by keeping them in view; yet we hope that no well-educated physician or surgeon, of even moderate experience, would think that it required any particular stretch of "inductive philosophy" to educe such self-evident propositions: yet so it is, according to Mr. Macilwain.

Our author observes, with reference to the liver, that "no organ is nearly so silent or insidious in its conduct of disease," meaning, we suppose, that there may be extensive disorganization of its structure or derangement of its functions with few or slight symptoms. We take in an immense quantity of "charcoal," and it must go out again. The liver is almost wholly engaged in excreting "charcoal" from the system (at this conclusion Mr. Macilwain arrives by a Macilwainean induction), and "therefore, in the regulation of disordered liver," we quote the inductive philosopher, "I try all I can to diminish the quantity of charcoal, except such as is contained in *necessary* food. A man may eat meat without fat; butter is unnecessary; so is sugar," &c. In all this there seems to us naught novel. Has it not been known from time immemorial that sweets, spirits, and such articles of diet made people bilious?—not exactly, we grant, in the "charcoal" mode, but in some mode, upon the exact nature of which even Liebig would be too modest peremptorily to decide.

We would shortly observe that the inductive philosophy of the other or-



gans of the body is very similar to the preceding. The lungs are "refrigerating organs," and it is by means of them, in combination with the skin, that animals maintain their characteristic temperature, by throwing off superfluous caloric. Mr. Maugham, "a man of striking talent, and a bold and original thinker," first drew the attention of our author "to the subject in the following manner: 'I wish,' said he, 'you would consider whether we do not maintain our temperature by the skin throwing off superfluous heat!' or words to that effect." Mr. Macilwain reminds us of Mrs. Gamp. "Mrs. Harris often and often says to me, 'Sairey Gamp,' she says, 'you really do amaze me,' *"or words to that effect"*—Mrs. Gamp might have added. We cannot really be serious, for the experiments our philosopher details are a burlesque on experimental philosophy. Punch, we are certain, might make something clever out of the experiment on the refrigerating "frogs, salamanders, and water-beetles." A Member of Parliament fresh from a vote on the Maynooth question, "temperature 70° Fahrenheit," would make an admirable refrigerating subject.

Mr. Macilwain's book is a striking illustration of a mind o'ervaulting itself. Ambitious to be a philosopher, he goes about it and about it, ever attempting to rise, but never mounting,—like a man on a treadmill. He is manifestly a pains-taking, persevering, industrious practitioner, and very trustworthy as such: indeed we believe him to be an excellent and successful physician, and we must think well of his general system of practice, as it is one we have ourselves long followed in the treatment of all chronic diseases. Had he, in his writings, confined his expositions to practical hints, and made no pretence to philosophy, we would, we are sure, have had a more pleasant task in dwelling only on his merits as an author. But we are bound to deny all honorable mention of his philosophy; and we cannot entirely pass by without notice some of his other defects. He is ignorant of chemistry, while he criticises Liebig: but then "he has reason to believe that Mr. Maugham, who is certainly eminently qualified for the task, is willing to devote himself to chemical analysis on such terms as will," &c. &c. He has boldly propounded a theory on the formation of tumours "entirely from his own practice," being all the while (by his own confession) "not aware what assistance we are likely to derive from microscopic inquiries." His style, also, although ambitious, is far from accurate, as will be seen from our quotations. Nevertheless, we recommend his book to all our younger readers, as likely to supply them with practical hints of great value in the treatment not only of tumours but of chronic diseases generally, whether surgical or medical. Two great temptations and dangers constantly beset the path of young men educated in this country, when called on to treat chronic maladies,—the temptation and the danger of Heroical Practice and of Empirical Practice. The perusal of Mr. Macilwain's book (if they will study its practical doctrines and let its philosophy pass) is well calculated to suggest to them that more comprehensive, cautious, regimènal, hygienic, safe, and, if we may so speak, natural practice—to which future experience is sure to lead them, and which is alone suited to such cases. If they are led to adopt this early in their career, they will assuredly thereby acquire much immediate satisfaction, and eschew the regret which, sooner or later, must ensue from following an opposite course.

## ART. XI.

*Traité d'Anatomie medico-chirurgicale et topographique, considérée spécialement dans ses applications à la Pathologie, à la Médecine légale, à l'Obstetricie et à la Médecine opératoire.* Par J. E. PETREQUIN, Chirurgien en Chef de l'Hôtel-Dieu de Lyon.—Paris et Lyon, 1844.

*A Treatise on Medico-Chirurgical and Topographical Anatomy, considered specially in relation to Pathology, Medical Jurisprudence, Midwifery, and Operative Medicine.* By J. E. PETREQUIN, First Surgeon to the Hôtel-Dieu, Lyons.—Paris and Lyons, 1844, 8vo, pp. 812.

It is no disparagement of M. Petrequin's work to say that it almost entirely consists of facts long and familiarly known, for such must necessarily be the case with respect to any work on surgical and descriptive anatomy now published. This obvious fact of course dispenses us from the necessity of entering into a detailed analysis of the present volume, and enables us to limit our notice of it to mentioning the few points as to which M. Petrequin either is or claims to be original.

*Motions of the eyelids.* These motions give rise to a good deal of discussion. It is generally said that when the eyes are closed, the upper eyelid is depressed by its own weight. Malgaigne thought the explanation improbable, because during closure of the eyelids their external commissure approaches the nose to the extent of about one line, and because when, the eye being open, we look as perpendicularly downwards as possible, so as to see the under lip for example, the external commissure ascends higher than when the eye is shut, while the centre of the upper eyelid, on the contrary, is more depressed. M. Petrequin also denies that the upper eyelid is depressed by its own weight, because in paralysis of the orbicularis palpebrarum muscle, and after death, it descends but partially, and he thence argues that this motion must be effected by the orbicularis, seeing that paralysis of that muscle during life and the loss of its contractility consequent on death prevent its occurrence. Still greater difficulty attends the explanation of the motion of the lower eyelid. When the eye is open and looks straight forward, the lower eyelid is depressed and it is not supplied with a special muscle to produce that motion. Charles Bell considered that it was pushed downwards and outwards by the eyeball which was protruded by the contraction of the levator muscle; but to this Malgaigne objected, that when we look directly downwards the levator is not contracted, and yet the lower eyelid descends much more than in the preceding case, while if we strain the eyeball upwards the levator is very much contracted, but the lower eyelid ascends more than six lines above the lower brim of the orbit; M. Malgaigne avows that he is unable to explain those facts, but M. Petrequin says we can readily understand all the motions of the lower eyelid, when we recollect that it is connected by the membrane of Tenon to the globe of the eye, and must therefore follow all its motions. We must confess that we cannot see how this circumstance explains the "depression of the lower eyelid in the act of opening the eye," though it does enable us to understand how after restoration of the lower eyelid the artificial lid may enjoy a certain amount of motion as named in a case published by M. Jobert, (p. 97.) M. Petrequin in like manner refers the partial preservation of the motions of the eyelid in paralysis of the

facial nerve to their connexion with the globe of the eye by means of the tunica albuginea (p. 160;) but this explanation is superfluous, for nothing is more familiarly known than that paralysis of the portio dura exists in very different degrees, and to a different extent in different cases, and that the orbicularis muscle, in common with other muscles of the face, for example those of the *alæ nasi*, are very frequently only partially affected.

*Adhesions of the eyelids to the globe of the eye, if of any extent*, are we believe, universally admitted to be irremediable; it is easy indeed to divide the adhesion with the knife, but a relapse has, so far we know, uniformly occurred during the progress of cicatrization. M. Petrequin has succeeded in remedying this acquired deformity in the following way. The principle of this method is to prevent the cicatrization of the opposed surfaces proceeding simultaneously, to have the healing process completed, or nearly so, on one surface before it has commenced on the other. In order to effect this object he pierces the adhesion at a suitable depth with a needle carrying a double ligature. The ligature corresponding to the eyelid is rather loosely tied, so that it shall very slowly divide the parts it includes, but the second ligature, which corresponds to the eyeball, is, on the contrary, very firmly constricted, and rapidly cuts through the adhesion. In this way the wound on the sclerotic may be healed before there is any exposed surface on the eyelid with which it can unite, and the denser and more extensive the adhesion, the easier it is, by regulating the tightness of the ligatures, to obtain an interval of several days between their separation. If the adhesion is very deep it must be divided by several operations, penetrating to a greater depth each time. The eyeball must be kept fixed during the process by means of carefully applied compression, as otherwise its motion and that of the eyelid might cause inflammation and premature separation of the ligature. (pp. 97-9.)

*Cleft palate.* The origin of cleft palate has been referred to very different causes, but no explanation has been hitherto offered of the remarkable fact that a fissure in the median line never occurs, except in the posterior part of the palate, and has never been observed anteriorly or in the lip. M. Petrequin accounts for this by the circumstance that the two inferior maxillary bones are not contiguous: as originally they are separated by the *inter-maxillary bone*, a fissure anterior to the palatine bones must therefore be situated between the inter-maxillary and one of the superior maxillary bones, and must be lateral at whichever side it may occur; but posteriorly the fissure must be median, as it exists between the two palatine bones which are not separated by any intervening bone. (p. 164.)

*Ranula.* M. Petrequin dissents from the prevalent opinion that ranula consists in a dilatation of the ducts of Wharton: 1st, because the symptoms of ranula are not similar to those of retention of saliva in the parotid gland; 2d, because the liquid it contains resembles, not saliva, but the glairy contents of some cysts; 3d, because the best mode of treating it is that which succeeds in cysts,—excision or obliteration of the cavity by irritant injections or by a seton; 4th, because, in ranula, incisions inevitably tend to close, while wounds of excretory canals, on the contrary, tend to become fistulous, and we never see after an operation on ranula the saliva flow abundantly during mastication, as occurs in salivary fistulæ; 5th, M. Brechet, on dissecting those tumours, always found that they were cysts occupying the

submucous cellular tissue; and 6th, the progress of dilatation of Wharton's ducts by salivary calculi differs essentially from that of ranula: thus, in a case in which a large calculus was extracted from the duct, M. Petrequin observed that the incision, so far from closing, remained fistulous, and several months after the saliva could be abundantly expressed from it by pressure. (pp. 181-2.)

*Stammering.* We regret to find that M. Petrequin is still an advocate for attempting to cure stammering by a surgical operation, with which view he recommends and practises division of the attachment of the genio-glossi muscles to the lower jaw. As to the results of the operation M. Petrequin says, "it cures sometimes, often ameliorates, but frequently fails to produce any effect . . . We may generally hope to succeed when the stammering occurs with the labial, dental, or palatine letters, when the tongue has a tendency to be carried downwards or forwards between the teeth, when inspiration and expiration are free, and the patient is not too old; but relapses are greatly to be apprehended; the stammer may completely disappear after the operation, and subsequently return . . . To ensure a cure it is always useful to exercise the tongue in an appropriate way." (pp. 186-7.) This account is candid, but not very encouraging; and we apprehend that the special exercises of the tongue recommended after the operation would achieve every thing obtainable if practised without it.

*Mammary fascia.* In the region of the mammary gland, the *fascia superficialis*, according to M. Petrequin, presents a disposition which has hitherto been overlooked; it divides in fact into two layers which adhere firmly to the anterior and posterior surfaces of the gland respectively, and thus forms a fibrous envelope for the gland, a disposition which explains the pain accompanying swellings and inflammation of the breast. (p. 235.)

*Motion of the ribs.* It has been denied that the first rib enjoys any motion. M. Petrequin says the reverse can easily be proved by the following experiment. It is known that by carrying the shoulder forcibly backwards and downwards the subclavian artery may be compressed so as to arrest the circulation in the upper extremity. If when the artery is thus compressed between the first rib and the clavicle, the latter bone be elevated about four lines, the circulation is restored in the arm; but if the first rib is elevated and depressed during respiration, the circulation in the arm should alternately disappear and return as the individual inspires and expires, and in point of fact if a full inspiration is made, while matters are circumstanced as has been just described, the pulse in the brachial artery ceases at once, and consequently the first rib is really elevated during each inspiration. (p. 258.)

M. Petrequin's experiments on wounds and on suture of the intestines possess considerable interest, but as we shall shortly take a full review of this subject we shall not enter on it here.

*Glisson's capsule.* Few points in anatomy have given rise to more confusion and mistakes than has the description of the capsule of Glisson, and, as M. Petrequin attaches particular importance to his rectification of the errors of various writers respecting this structure, we shall give an abstract of his account of its structure, disposition, and uses. Underneath the serous covering of the liver lies its fibrous coat or *tunica propria*. At

the transverse fissure of the liver this *tunica propria* sends off along the branches of the vena portæ, of the hepatic artery, and of the biliary canals, prolongations which form a kind of cylindrical sheath for each of these vessels and their several subdivisions; it is those prolongations or sheaths alone that form the *capsule of Glisson*, and not the *tunica propria*, of which the capsule of Glisson is but a dependency. As to the use of the capsule of Glisson, M. Petrequin is of opinion that it is destined to facilitate the portal circulation. The liver is a compact organ not readily admitting of being distended, there is no heart to impel the blood through the vena portæ, nor are there even valves to sustain the column of blood in it; its capacity is greater than that of the mesenteric artery to which it corresponds, and it is one of the vessels whose caliber is most variable, because from its relations to the digestive organs, it must admit of dilatation when fluids are absorbed, and be enabled to contract when those fluids have passed off. The various obstacles to the portal circulation here enumerated are counteracted, and the power of accomodating the capacity of the vessel to its contents is ensured, by its running in a fibrous sheath, and being quite independent of the tissue of the liver; it can dilate or contract as the quantity of fluid traversing it increases or diminishes, and it can also contract so as to press on the blood it contains, and favour its circulation. (pp. 339-45.)

*Descent of the testicle.* M. Petrequin had an opportunity of dissecting a man aged 36, in whom one of the testicles had descended to the external ring, and the other remained within the abdomen. Unfortunately no description is given of the condition of the structure of the glands, it is not stated whether they were atrophied or had sustained any other alteration, nor are we told whether the virility of the individual was affected. We ourselves are convinced that detention of the testicles in the abdomen does not impair the procreative powers, but still as the dissections of those organs when so detained are few in number, we regret the omission in this instance. M. Petrequin is of opinion that, as late descent of the testicles is in the first place uncertain, and when it does occur, exposes the patient to hernia, or to the perhaps still greater inconvenience of having the gland arrested in the inguinal canal or at the external ring, it would be prudent when its absence from the scrotum is ascertained at birth to apply a truss in order to prevent the occurrence of those mischiefs. We refer our readers to our review of Mr. Curling's excellent work on 'Diseases of the Testicle' for a tolerably full consideration of this question. (pp. 374-7.)

Ossification of the septum of the corpora cavernosa occurs very rarely, and M. Velpeau is of opinion that it would occasion constant and distressing results, from which M. Malgaigne dissents, citing a case in which this affection caused no inconvenience in the ordinary condition of the organ, but produced great annoyance during erection. M. Petrequin saw a patient of M. Regnoli of Pisa, in whom ossification of the corpora cavernosa supervened on a contusion of the pelvis, and the organ was much incurvated when erect; the ossified portion of the organ, which did not include the entire thickness of the corpora cavernosa, was excised, no bad symptom occurred, and the power of erection remained. (pp. 389-90.)

*Length of the urethra.* Authors differ extraordinarily in their statements respecting the length of the urethra, as appears from the following table which we borrow from M. Petrequin:

M. M. Malgaigne	. 5½ inches to 5¾	(Anat. Chirurg.)
Velpeau	. 5 "	7 (Ib.)
Amussat	. 7 "	8 (Archiv. de Méd.)
Meckel	. 8 "	
Whately-Ducamp-Begin	7½ "	8½ (Dict. de Méd. et Chirurg. Prat. t. xiv. p. 290.)
J. Cloquet	. 7½ "	11 (Anat. Descript.)
Lisfranc	. 9 "	10
H. Cloquet	. 9 "	11 (Anat. Descript.)
Sabatier	. 10 "	12 (Méd. Opérat.)

In order to reconcile those discrepancies M. Petrequin examines the question under two heads: A, *the total length of the urethra*, and B, *the relative length of the urethra*. (pp. 399-400.)

A. *Total length*. This varies with the age, with individual peculiarities, and as the organ is erect or flaccid. But what is the mean length, and how is it to be determined? The method of injection is defective as its results vary with the force employed, and therefore merely indicate the dilatability of the urethra. The measurement with sounds has hitherto, according to M. Petrequin, been imperfectly applied, and with a view to greater accuracy, he has conducted the investigation both with straight and with curved instruments; with a straight instrument he generally found the length of the urethra between 5½ and 6½ inches, and with a curved instrument from 6½ to 6¾ or even 7 inches; the difference arising from this, that the urethra not being naturally rectilinear, a straight instrument cannot be passed through it without effacing the angle between the bulbous and membranous portions of the canal; from these results M. Petrequin dissents from the statements of M. Velpeau, that when a catheter has been passed six inches into the urethra without elongating the penis it has arrived in the bladder, and that when we leave a gum-elastic catheter in that organ one inch of the instrument will be in its cavity if we introduce it to the depth of 6½ inches. (pp. 400-2.)

B. *Relative length*. By this term M. Petrequin means the estimation of the respective lengths of the several portions into which the urethra is ordinarily divided.

An exact determination of the average extent of the prostatic portion of the urethra is very important in relation to the operation of lithotomy. Boyer states it to be 15 or 16 lines; Littre 15; Ducamp and Blandin from 12 to 15; Senn 13; J. Cloquet 15. M. Petrequin agrees with Lisfranc, that the most exact approximate measurement is from 8 to 11 lines, but this length increases in enlargements of the prostate. The length of the membranous portion of the urethra is said by Boyer to be 12 lines, by Ducamp from 9 to 12, by Blandin 10, and by Lisfranc from 7 to 11. M. Petrequin has generally found the length of this portion of the urethra vary from 6 to 9 lines, when measured by its central axis; for it must be recollected that its parietes are of unequal length, its upper and longer surface measuring from 8 to 10 lines, while its inferior surface is about half that length, or 4 or 5, or sometimes 6 lines. The mean length of the prostatic and membranous portions of the urethra taken together is, according to Malgaigne, 13 lines, but varies from 11 to 15 lines; M. Petrequin has found it commonly vary from 14 to 18, and sometimes 20 lines, which agrees with the measurements of Mercier pretty closely. As to the bulbous and pendulous portions of the urethra, their *rectilinear*

measurement is 6 inches and 6 or 10 lines, and the *curvilinear* measurement 5 inches, or 5 inches and 4 lines. M. Petrequin agrees with Shaw and others, that the majority of strictures of the urethra occupy the posterior part of the bulb about  $4\frac{1}{2}$  or 5 inches from the orifice of the urethra. (pp. 403-4.)

**Menstruation.** M. Petrequin's researches respecting the menstruation of females in the east of France have led him to adopt the conclusion, that one half menstruate between the ages of 13 and 15. The *critical age* occurs between 35 and 55, according to the following distribution.

Between 35 and 40 years in		1.8th of the whole number of women.	
40	45	1-4th	"
45	50	1-2d	"
50	55	1-8th	"

Thus fecundity ceases between 45 and 50, in about one half the entire number of women, and between 40 and 50 in about three fourths. As to the *duration of fecundity* he has found.

The minimum from 30 to 35 years in less than a quarter.			
medium	25	30	more than a half.
maximum	31	38	about three quarters. (pp. 463-6.)

**Prolapsus uteri.** Several cases are recorded in which polypus of the uterus has been mistaken for prolapsus of that organ. M. Petrequin adds another to the list in the present volume. The patient, a woman aged 50, was considered not only by M. Petrequin, but by several other practitioners, to labour under prolapsus of the uterus, and as she was being exhausted by hemorrhage, the tumour which hung between the thighs, and measured 4 inches in one diameter, and 7 inches in another, was removed by ligature, and M. Petrequin was quite convinced that he had removed the womb; three weeks subsequently the woman died from pneumonia, and it was then ascertained that the tumour was a large polypus which had caused partial inversion of the uterus. (pp. 475-7.)

**Dislocation of the ulna.** Isolated dislocation of the ulna, that is the radius retaining its natural relations to the humerus, is considered by some authors impossible, and by all, we believe, very rare. M. Petrequin, on the contrary, thinks partial dislocation of the ulna a very frequent accident, and says he has ascertained that the radius usually remains in situ; he attaches considerable importance to this remark, as the mode of reduction should, he maintains, vary according as the radius is displaced or not. If both bones of the fore-arm are displaced, extension should be made while the forearm is pronated, so as to act on both bones in a right line; if the ulna alone is luxated, M. Petrequin thinks the reduction is best effected during supination of the forearm, and employs the radius as a lever and point d'appui, resting the epicondyle on his knee, and abducting the arm, which tends to separate the opposed surfaces of the humerus and of the ulna, and greatly facilitates the reduction. In this manner he reduced two dislocations, one of 7 weeks, the other of 101 days' standing. (pp. 589-90.)

**Necrosis.** J. Cloquet, Sanson, and others say that a bone is elongated during necrosis. M. Petrequin maintains the very reverse doctrine, as in two cases of necrosis of the radius he found that bone obviously shorter than the ulna, which projected considerably below it inferiorly, and thus

inclined the hand to the radial side, contrary to the natural disposition of the parts. M. Petrequin ascribes the shortening in those cases to an arrest of development of the bone. We have no doubt that his observations are perfectly accurate, but we are equally certain that bones are much more frequently elongated during the progress of necrosis. The removal of a sequestrum from the radius is difficult, as the bone is almost entirely surrounded by tendons, nerves, arteries, and veins. M. Petrequin recommends the following mode of operating, which succeeded perfectly in two cases. By carrying an incision from the middle and posterior aspect of the radio-carpal articulation to the inferior third of the external border of the radius, we run along the dorsal branches of the radial vein, which are easily drawn aside; if the aponeurosis is now divided, the abductor and extensor of the thumb are exposed, and should be drawn outwards, separating them from the periosteum, so as to expose a sufficient surface of the bone to enable one or two small crowns of a trepan to be applied, in order to expose and extract the sequestrum. (pp. 605-6.)

*The groin.* M. Petrequin calls particular attention to the disposition of the *fold of the groin*. Its depth augments when the thigh is flexed and rotated inwards, and diminishes when the limb is extended; but it is never obliterated and is very deep and well marked in ascites. This permanence of the fold of the groin M. Petrequin attributes to the integuments being directly and firmly attached to the symphysis pubis by a radiate expansion of fibro-cellular tissue, which he names the *cutaneous ligament*, or *suspensory ligament of the fold of the groin*. The skin is also similarly but not so firmly attached to the spine and crest of the ilium. (pp. 660-1.)

*Inguinal and femoral rings.* The influence of the position of the trunk and of the lower extremity on the size of the inguinal and of the femoral rings, has not hitherto been accurately determined, according to M. Petrequin. From the result of numerous experiments on the dead body, he draws the following conclusions. Rotating the thigh outwards, and flexing it on the pelvis, considerably enlarges the external inguinal ring; simply flexing the thigh does not produce the same effect, but if in addition to flexing and rotating the thigh outwards the trunk is inclined forwards, the ring assumes its maximum size. Sitting on the hams, therefore, during the act of defecation, is dangerous in persons affected with constipation and predisposed to hernia, for the thighs being flexed and separated, and the trunk thrown forwards, the ring is at its maximum size. This posture should also be selected to favour reduction of a hernia when it is strangulated at the external ring, an event which M. Petrequin does not think of as rare occurrence as other authors do. (p. 668.) As regards the *internal crural ring*, M. Petrequin infers from experiments on the dead body, that it is most relaxed when the thigh is flexed, rotated inwards, and at the same time slightly abducted. Scarpa notices the relaxation of the ring when the thigh is flexed and rotated inwards, but he has not mentioned the additional influence of combining abduction with those motions. (p. 697.)

We have now given our readers a fair and we believe a full account of anything approaching to novelty contained in M. Petrequin's work. The book itself, however, is well worthy of perusal, and will be an useful work of reference for the practitioner. The descriptions are, we believe, universally accurate, though frequently not very clear, for the author has



carried condensation to excess, a fault seldom to be found with French authors generally, whose endless prolixity contrasts strangely with the studied brevity of M. Petrequin. It would of course be a very unprofitable occupation of our space to give any specimens of the manner in which M. Petrequin arranges and describes familiar anatomical facts, but we may just say that we have hardly seen better or clearer descriptions than those he gives of the axilla, of the perineum, and of the anatomy of hernia.

## ART. XII.

*An Essay on the Philosophy of Medical Science.* By ELISHA BARTLETT, M.D. Professor of the Theory and Practice of Medicine in the University of Maryland.—*Philadelphia*, 1844. 8vo, pp. 312.

THE purpose of this work is a most laudable one—the advocacy of careful and accurate observation of the phenomena of disease, as the only source of real improvements in medical practice. We think, however, that he has pushed his argument rather to an extreme; and that he does not attach sufficient value to *principles*, as the chief constituents of the *science* of medicine. As we have on two preceding occasions formally treated this subject, vol. V, p. 317, and vol. VI, p. 98, we may refer to the articles in question for a fuller exposition of our own views in regard to it; and shall confine ourselves at present to the examination of a few points, in which we think that Dr. Bartlett has gone wrong.

He assumes in *limine* the following positions:

"1. All physical science consists in ascertained facts, or phenomena, or events; with their relations to other facts, phenomena, or events; the whole classified and arranged.

"2. These facts, phenomena, and events, with their relations, can be ascertained only in one way; and that is, by observation or experience. They cannot be deduced or inferred from any other facts, phenomena, events, or relationships, by any process of reasoning, independent of observation or experience.

"3. A law, or principle, of physical science consists in a rigorous and absolute generalization of these facts, phenomena, events and relationships; and in nothing else. It is identical with the universality of a phenomenon, or the invariableness of a relationship." (p. 3.)

These canons *appear* entirely coincident with the views of the best authorities on the subject, as well as with the dictates of common sense; and yet there lurks in them—we will not call it a fallacy but—a departure from the ordinary acceptance of terms, which lies at the root of that which we deem erroneous in the subsequent part of the work. We shall devote a short space, therefore, to the analysis of their meaning; which is more fully explained in the following quotation:

"The first proposition, that which stands at the head of this chapter, does not require much illustration. Its truth is so manifest, as hardly to admit of any doubt. It would seem almost impossible that there should be any difference of opinion as to its soundness or obscurity in its conception. I believe, nevertheless, it is true, that there has always been, and that there still is, in the minds of most men, and in those of philosophical thinkers, a somewhat imperfect, or confused, apprehension of its doctrines. I do not think that its truth is seen and felt, as it should be, in the simplicity, the purity, and the absoluteness, which belong to it.

The confusion, to which I allude, is this. There seems to be a common feeling, that the facts, phenomena, and events, with their relationships, classified and arranged, constitute, not the entire science, to which they belong, but only the *foundation* of the science. There is a feeling that these facts and relations are to be used as elements, out of which the science is to be built up, or constructed, by what is called *inductive reasoning*. The feeling implies, and the avowed doctrine growing out of it often asserts, that the science is *in this subsequent process of reasoning*, and not in the facts themselves or their relationships. We are constantly told, that the facts are to be used *as materials*, to be sure; that it is not safe to take for our materials anything but facts; that they constitute the *basis* of every science; but after all this, the essential condition and constituent of the science is often placed more in the process of reasoning, as it is called, than in the facts and their relationships. Now, what I wish to insist upon is this; that the science is *in the facts and their relationships, classified and arranged, and in nothing else*. The ascertained facts and their relationships, classified and arranged, constitute, in themselves, and alone, the science and the whole science to which they belong." (pp. 6-8.)

Now Dr. Bartlett has an undoubted right to use the term *science*, or any other, in whatever sense he thinks proper, first defining (as he has here very clearly done) the exact meaning which he attaches to it. Nevertheless we question whether it is well to depart so widely from the received acceptance of the term; connected, as it is, in the minds of philosophers, with an idea so very distinct as that which Bacon and his followers have attached to it. We may best, perhaps, illustrate our own conception of its meaning, and the point wherein we differ from Dr. Bartlett, by analysing one of his own examples. "The whole science of gravitation," he says, (p. 9,) "consists in its phenomena, classified and arranged, and in nothing else." Now on this we remark, in the first place, that the simple collection and classification of phenomena does not necessarily constitute science. We may adopt a wrong principle of classification, and thus be as far from discovering any general principles as if we had made no arrangement at all; this has been most egregiously the case in the various artificial systems of natural history: or, having adopted a right method of classification, we may not be able to grasp the true principles regulating the phenomena, in consequence of the agency of some modifying circumstance, which so disturbs its results, as to prevent their true relation from being seen. This was the case in regard to the influence of the resistance of the air upon falling bodies; which caused the ancient philosophers and their blinded followers to maintain, that the law of gravitation was quite different for light and for heavy bodies,—until they were set right by Galileo, who may be said to be the discoverer of the true law of terrestrial gravitation, as Newton was of the bearing of that law on celestial phenomena.

Now it is in the discovery of such *laws*, that *science* consists; and in proportion as any group of phenomena is included within laws, that are not only general expressions of the phenomena with which we are already acquainted, but are found to be equally applicable to those which are progressively discovered,—so as to give to the philosopher in possession of them the power of *predicting* with certainty the results of new combinations of circumstances,—in that proportion do they constitute a *science*. This power of *prediction*, the most valuable result of the attainment of general laws, seems to us to have been almost completely overlooked by

Dr. Bartlett; and his want of appreciation of the real nature of *scientific* as distinguished from *empirical* knowledge, is obvious to us throughout his essay. Nothing but the collocation and classification of the phenomena is required for the deduction of *empirical* laws; thus by bringing together the number of deaths at various ages, which occur in a given population during a certain time, the *law* of the rate of mortality and the expectation of life can be deduced; or by similar statistical calculations, the proportion of crime to education may be determined. If science consisted of such laws as these, Dr. Bartlett would be perfectly correct in his appreciation of it; but a very little consideration must make it apparent, that—however useful in themselves—they are of a character entirely different from those general laws, which it is the object of the philosopher to trace out amongst the phenomena of nature. Let us contrast, for example, the law of gravitation with that regulating the rate of mortality in a given district. The former enables us to measure the force which, under all circumstances whatever, will tend to draw together two bodies of known weights, and to predict *with absolute certainty* the result of the conjoint operation of this force with others. It admits of no exceptions; its comprehensiveness is only equalled by its simplicity; and it connects, like the secret clue of a labyrinth, all the phenomena which bear the slightest relation to it. But a table of mortality expresses only *probabilities*. It assumes the experience of the past as the guide to the future, but only so far as the same causes may be presumed to be in action; its application is consequently of the most limited nature, being liable to be contravened by any change in the almost numberless influences which may bear upon it; and there is nothing like a common relation,—save that of the fact of *death*—binding together the different phenomena. For the discovery of truth, these empirical formulæ are often of great value; but we must not stop short in them, and plume ourselves with the idea of having arrived at our end, when we are, in fact, only in the very beginning.

We could scarcely find a better illustration of the difference between empirical laws and real generalizations, than the comparison of the laws of planetary motion, discovered by Kepler, and the fundamental laws of motion enunciated by Newton. Kepler, after almost an infinity of guesses,—the mingled ingenuity and absurdity of which we can scarcely help admiring and pitying—at last stumbled, by a wonderful piece of good fortune, upon those laws which pass by his name. He perceived that the inequalities in the rate of the planet Mars might be accounted for by the supposition, that its “radius vector passes over equal areas of its elliptical orbit in equal times.” This was (for the time) an empirical formula, which perfectly well expressed the inequalities in the rate of motion of the planet Mars; but which might, or might not, be equally applicable to those of other planets. It was found, on examination, to be thus applicable; and this was an important step in true generalization. Still, however, the formula was so far empirical, that no reason could be assigned *why* it should prevail elsewhere; nor could it be predicted whether, in the case of a newly-discovered planet, the same rule would apply. It was reserved for Newton, however, to give to this formula (and also to the other on which Kepler had been fortunate enough to stumble, viz. “that the squares of the times of revolution are as the cubes of the distances,”) the dignity

of a real *law*; by showing that it necessarily results from the combination of the simple principle of gravitation with the laws of motion; and that, as *these* are of universal operation, it must govern *every* case of elliptical revolution.

Having said so much upon the general question, we shall not follow Dr. Bartlett through the details of his inquiry into the value of hypotheses in physical science. Most truly does he remark, that all approved and stable generalizations in science are based upon an extended foundation of facts; and that, however striking and seductive such generalizations may be, they have no claim to be received as certainties, until they have been shown to possess such a foundation. But in his zeal against hypotheses, he has altogether forgotten that most, if not all, of those scientific principles, on which we feel that we can securely rest, were first brought forward in that very form; and that it was only after the long and patient application of tests, by which their truth or falsity might be established, that they have acquired their present character. Thus the law of universal gravitation was long a hypothesis floating in the vast mind of Newton. So far as related to the fall of small bodies towards the earth, it had been determined by his predecessors; but by sagacious reasoning he was led to the idea, that the moon might be held in her orbit round the earth by a similar attractive force. Now this might be called (and was in fact considered at the time) a most daring and fanciful *hypothesis*. On first attempting to verify it, Newton was baffled by errors in the data on which he worked; and finding that the conclusions of experience did not correspond with those of his theory, he put the latter aside, in hope, as it subsequently proved, that more accurate data might be found to afford the required correspondence. This was the case some years afterwards; the length of a degree was ascertained to be sixty-nine and a half miles instead of sixty; the measure of the diameter of the earth was consequently increased; and the calculated deflection of the moon from a straight course in a given time, was found to correspond so exactly with her real departure, that the *hypothesis* became a *law*, so far at least as the moon was concerned. Its extension to the other planets, and to comets, was the work of Newton himself; but its grasp of a far more gigantic range of phenomena,—the mutual revolutions of the double and triple stars,—has been the result of the labours of our own contemporaries. Until it could be shown that the principle of mutual attraction operates, not only upon the bodies composing our solar system, but also upon those which make up the stellar universe, its *universality* was a *hypothesis*.

In the same manner it would be easy to show, that the *law* of definite proportions was, in the mind of Dalton, at first a hypothesis, based upon a few facts, and not entitled to any higher dignity, until it had been tested by more extended inquiry. The universality of its application, in organic as well as in inorganic chemistry, is only now being recognized; and in some of its applications, this law must still be regarded as hypothetical.

It appears, then, that the boundary between *hypothesis* and *law* is not by any means so clear as it might seem at first sight; for that every law must be more or less of a hypothesis, until its applicability to all the phenomena, which it can possibly have a share in producing, has been tested. The truly philosophic mind, it has been well remarked, shows itself in the

readiness or aptitude for the construction of hypotheses,—in the equal readiness to abandon them, so soon as their instability has been proved,—and in the caution with which they are employed, whilst on their trial.

There is, probably, no science in which this caution is more necessary than in medicine; for there is none in which it is more difficult to frame a really good hypothesis, and none in which the devotion to a bad one is more prejudicial. But *some* hypothesis is absolutely necessary. And we fearlessly assert that the *scientific* physician, whose knowledge of the theory of medicine is applied with even a moderate degree of judgment, is less open to the charge of misuse of hypothesis, than is the *empirical*\* practitioner, who professes to found his treatment immediately upon experience, and to discard theory altogether. For the latter assumes a sweeping hypothesis as the very basis of his practice; viz., that a plan of treatment which he has found successful in one case will be probably alike successful in another which may present a general similarity in its phenomena; and he puts on one side, as of no account in comparison with what strike him as the leading features of the case, those slighter differences which are, to the more scientific, the most important indications in respect to the real nature of the disease, and the indications for treatment. Thus have we seen a physician of days gone by prescribe bleeding after bleeding for a chlorotic patient, simply because she complained of pain in her side, and her blood presented a buffy coat. Is the practitioner who is aware of the real nature of the buffy coat, the conditions of its formation, the deficiency of red corpuscles, and the influence of iron in producing an increased production of them, to be charged with a dangerous use of hypothesis, because in such a case he prescribes ferruginous medicines instead of venesection? Surely not. The danger is on the side of the practitioner, who *presumes* that a buffy coat and pain in the side are indications of inflammatory action; and who, adopting the lancet as his chief instrument for combating that inflammation, reduces his unfortunate patient to a state of almost absolute anæmia.

Let us take a still more extreme case. The professed empiric, who vaunts his secret remedy as a certain cure for all diseases, proceeds upon the *hypothesis*, (see the advertisements of Messrs. Morison and Moat, hygeists,) that all disorders have one common origin, which his panacea can remove. Whether he believes this hypothesis or not, he causes the public to believe it, and to act upon it. Now we do not see any very wide distinction between *his* method, and that of the routine practitioner, who attributes nine tenths of the diseases which present themselves for his treatment, to some single organ; or who uses for their cure a limited number of remedies, with little regard to any but certain prominent symptoms, upon which his mind rests as the indications of his treatment. Whether the brain, the stomach, the spinal cord, the liver, the spleen, the pancreas, or the kidneys, whether the solids of the body, or its fluids, be in his mind the favorite seat of disease, the case is fundamentally the same; his practice is founded on a *hypothesis*, which attributes a great variety of effects to a common cause; and this hypothesis is the more erroneous, and consequently injurious, as being founded on a very limited and imperfect

\* We here use this term in its classical sense.

knowledge of the phenomena to which it applies. Or if, whatever be his ideas in regard to the nature and seat of the disease, the practitioner places his whole trust in a limited number of remedies, and uses these with little discrimination in a great variety of cases, the rationale of his practice (if rationale it can be said to have) is a *hypothesis*, which assumes a similarity in the effects of particular medicines, when there is an apparent correspondence in the symptoms which they are intended to alleviate.

We have now attempted to show that *all* application of remedies to disease must be to a certain extent hypothetical; and if this be granted, we do not think it will be denied that the greater the comprehensiveness of the hypothesis, and the more extended the foundation of ascertained facts on which it is erected, the greater will be the amount of confidence it deserves as a guide in the therapeutic art. The distinction between the scientific and the routine practitioner, therefore, is not in the employment of hypothesis by the former, and the rejection of it by the latter, but in the superior validity of the hypotheses adopted by the former over those assumed by the latter, arising out of the greater accuracy and more extensive range of the observations on which they are based.

Having said so much upon the general questions discussed by Dr. Bartlett, it is the less necessary that we should follow him into the particulars of the second portion of the work, which treats of the Philosophy of Medical Science. As already stated, we differ from him widely as to what constitutes *Science*; and as there is scarcely any part of the Essay which is not imbued with the peculiar and (in our apprehension) erroneous view which he has taken of its character, there is very little with which we can heartily accord. The following passage expresses the chief peculiarity of his doctrine:

"The feeling has been, and still is, as much, almost since the time of Bacon as before,—that the science is *in the inductive or reasoning process*, superadded to the facts and their relations, more than in these latter themselves. Here, at the commencement of this part of my Essay, I wish to enter my protest against this doctrine in all its forms and modifications. I wish to show that the science of medicine consists *in the phenomena of life, with their relationships, classified and arranged*,—WHOLLY, ENTIRELY, ABSOLUTELY. I wish to show that these elements constitute,—not the foundation upon which, nor the materials merely with which, the science is to be subsequently constructed by some recondite and logical process of the reason,—but that they *are* the science, and the whole science, already constructed, and so far completed; and that nothing can be superadded to them by any act of the mind, which can in any way increase their value or change their character." (p. 69.)

On this we think it will be sufficient for us to point out that no such collection of facts as Dr. Bartlett regards as constituting science, can ever enable us to predict any unknown result from given data; such prediction being entirely dependent upon the discovery of the common principle connecting the phenomena, and upon the law of its operation. We find the power of making such predictions to bear an exact correspondence with the degree of generality that has been attained in the particular science, by the inductive process, which seems to Dr. Bartlett so incomprehensible, but of whose nature we shall not do our readers the injustice to suppose them ignorant.

In his eagerness to prove that every department of medical science is made up of its own distinct class of facts, Dr. Bartlett is led still further into errors, which appear to us so palpable, that we can scarcely understand

how any man of his obvious ability could fall into them. Thus he asserts (p. 99) not only that "the knowledge of pathological phenomena does not *flow from* the knowledge of physiological phenomena," but also that "the science of pathology is not built upon the science of physiology." Now as every day's experience is opening new applications of physiological principles to the explanation of pathological phenomena (we could scarcely, perhaps, select a better example of this than the improved knowledge of the nature of convulsive diseases, which has resulted from the correct determination of the healthy functions of the spinal cord), we cannot believe that our readers will assent to the above-cited proposition,—any more than they will accord with others of a similar character, by which it is followed up, such as that therapeutics is not deducible from physiology or pathology. We regard these and other errors of Dr. Bartlett's as originating in the very imperfect state of these sciences at the present time; the principles which have been attained in them being of very limited generality, as well as (from the complicated nature of the phenomena to which they apply) far less certain in their operation. The very exceptions which he points out to these sweeping statements are, in our minds, but indications of the existence of the fundamental connexion which exists between the several branches of medical science. True it is that each department must have a distinct set of facts of its own; but all these facts appertain to one and the same subject,—the living human body. This body in disease is not so different from the body in health as to require an entirely new mode of considering its phenomena; on the contrary, all the knowledge which we can obtain of the changes it presents in health is so much gained towards the comprehension of the occurrences of disease. Dr. Bartlett writes as if the *facts* of physiology and pathology were as simple and palpable as those of physics or chemistry; almost entirely overlooking, as it appears to us, that nearly every one of the phenomena which commonly present themselves for observation, is made up or compounded of a number of simpler facts; and that it is frequently in the analysis of these, and in the discovery of the leading or fundamental change from which the others are deducible, that the greatest sagacity and scientific knowledge are required.

Take, for instance, almost any form of convulsive disease;—its prominent symptoms are but expressions of a disordered state of the nervous centres. This we are taught by physiology. We are further enabled, by our physiological knowledge, to limit the immediate seat of the affection to the spinal cord (the brain may, or may not, be involved in it); and we are directed to look for some *eccentric* cause, which acts as the stimulus to the reflex action of the organ,—such, for example, as the irritation of teething, or of worms in the intestinal canal. Or it may be, in default of this, we shall have to look for the cause in the irritable state of the spinal cord itself; and to inquire if disordered nutrition, or retained secretions, may have perverted the condition of the blood, so as to affect this most sensitive organ.—Now it seems to us absurd to say that the facts of this pathological or morbid state are of a character altogether different from the normal or physiological phenomena which constitute the healthy function of the organ; for the *modus operandi* in each case is precisely the same; and the difference is not one of *kind* but of *degree*. Equally absurd is it to say that the therapeutic indications in such a case are not connected with the

inductions of physiological science ; since they are obviously and distinctly derivable from them.

In like manner, we have on a former occasion attempted to show, (vol. XVIII, p. 91), that the act of inflammation, with all its morbid phenomena, is but the result of an alteration of the natural relation between the blood and the tissues ; the plasticity of the former being increased ; whilst the organizing processes and general vitality of the latter are in a depressed condition. Hence this disordered state, when traced to its fundamental or original causes, is found to be much more closely related to the ordinary or normal process of nutrition, than would at first sight appear ; and to depend, not on any new *kind* of property in either the solids or the fluids, but merely on an alteration in the *degree* of those, with which physiology makes us acquainted.

Though we have felt it requisite to say so much in disparagement of Dr. Bartlett's work, yet we feel bound to add, that its object is a most laudable one,—viz. to fix the attention of medical observers upon the *facts* of their science, and to lead them to collect these with truthfulness and discrimination. And whether, with Dr. Bartlett, we regard the facts as themselves constituting the science, or whether we consider them to form the basis upon which the science is to be founded, there is the same necessity for obtaining them. But it can scarcely be denied, that much of the value of medical observations depends upon the account of preliminary knowledge with which they are prosecuted. Ignorance and prejudice are alike injurious ; the former leading to the neglect of many of the most important indications ; the latter to the substitution of theoretical interpretations for the facts themselves. We are sorry to be compelled to believe that, taken as a class, medical men are not distinguished by their qualifications for correct observation. It was remarked long since, that there are more “false facts” than “false theories” in our science ; which, considering the vast amount of the latter, is certainly giving a pretty liberal allowance to the former. Yet we are well convinced of the justice of the assertion ; and shall probably make an attempt, ere long, to give a fuller expression of our own ideas on Observation and Logic in Medicine.

#### ART. XIII.

*Beobachtungen über den Scorbut, vorzüglich in pathologisch-anatomischer Beziehung.* Von G. v. SAMSON-HIMMELSTIERN.—Berlin, 1843.

*Observations on Scurvy, especially with reference to its Pathological Anatomy.* By DR. G. v. SAMSON-HIMMELSTIERN, Chief Physician in the Alexander-Cadet-Corps at Brest-Litowski.—Berlin, 1843. 8vo, pp. 156.

SINCE 1795 or 96, scurvy may be said to have ceased to exist in the British navy ; and the improvements in horticulture and general hygiene have rendered it almost unknown to the civil practitioner ; but to our shame it may be stated, that our prisons occasionally afford instances of it, and that the British mercantile marine is still disgraced by its frequent occurrence. The latter stigma however, it may be hoped, will not exist much longer, in consequence of a late enactment, which compels a proper supply of the necessary preventives of the disease, to the crews of all vessels pro-



ceeding on long voyages: but the fact, that in this country—which may boast of having been the first to prove, on a large scale, how easily this disease may be prevented, and cured,—it should still continue to exist in any public institution, and in merchant vessels, will tend to diminish the surprise that the appearance of this work of Dr. Himmelstiern's would otherwise have been calculated to produce. By it we find that scurvy still prevails to a lamentable extent in the imperial naval hospitals and depôts of Russia, although we believe it does not occur in her fleets when at sea. That this disease should be rife among the lower classes of people in the northern parts of that empire is what might readily be supposed, when we call to mind its former prevalence and great fatality in this country, so late as the commencement of the 18th century, but that it should, we might almost say be *allowed*, to exist to so fatal an extent in the Russian naval hospitals, as to afford the materials for such a work as this, is really remarkable. One of two causes must be assigned for such a difference in the sanitary condition of the inmates of a Russian and a British naval hospital; either the means found by the experience of fifty years to be so efficacious for the prevention of the disease in this country for some reason lose their efficacy in Russia, or they are not employed at all. We have no knowledge of the regulations of the Russian service in this matter, but it would appear, from the intrinsic evidence afforded by the work of Dr. Himmelstiern, that the latter is in all probability the true state of the case.

If his conjectures as to the cause and nature of scurvy represent, as we are inclined to believe they do, the opinions entertained generally in the Russian naval service on this subject, the continued prevalence of this scourge there may reasonably be attributed at least as much to the ignorance which prevails as to its true nature and the means for its prevention, as to any peculiarity of climate or constitution.

The object of Dr. Himmelstiern, in the present work, has been more the elucidation of the pathology of scurvy than its etiology or treatment; but as he does shortly state his views on the former subject at the end of the book, and frequently refers incidentally to its treatment in the body of it, we shall not be unjust in considering it, so far as it goes, as a summary of his notions on both these points.

His opinions as to the cause of scurvy are, that it arises:

1st. From a terrestrial miasm, which prevails chiefly in the spring, and also from a miasm peculiar to *hospitals*, prisons, and ships.

2dly. To a prolonged suppression of the cutaneous secretion.\*

3dly. He enumerates innutritious food, and depressing mental impressions, as among the circumstances which aid the influence of the above causes.

He also states that the proximate cause of the disease may be considered to consist in a broken down condition of the blood, an incipient death of it, and to an obstructed innervation of the vessels. The author's treatment seems to be in accordance with his notions of the etiology and nature of

\* He strengthens this argument by adducing, among others, Gluge's experiments on frogs and puppies, in which he had prevented the cutaneous transpiration by the application of a turpentine varnish, and in all these instances found, after death, a remarkable fluidity of the blood, and the author believes that a similar condition of the blood is induced in scurvy by the dry and unperforable condition of the skin in that disease. See also our review of M. Fourcault's work in the present Number.

the disease—vague and theoretical; and we are thus able, perhaps, to surmise one reason of its greater prevalence in the naval service to which he belongs, than in our own.

Leaving these considerations, however, out of the question, his work will be found to contain a tolerably copious summary of all that has been described, with regard to the pathological anatomy of the affection, than which perhaps few points connected with the disease have been less satisfactorily treated. The older writers, who had abundant opportunities of making investigations on the subject, have so obviously allowed their imaginations to bring what they observed into accordance with their various theories of the nature of the disease, that little of any value can be gathered from them; and later ones have apparently attended less to this part of the subject of scurvy than to the more immediately useful consideration relating to its prevention and cure. Animal chemistry appears to be the source from which any additional information of importance is to be looked for. And a correct account of the changes induced in the blood by the influences which produce the scorbutic condition, is yet a desideratum of very great importance.

Dr. Himmelstiern arranges his subject according to the alterations produced by scurvy in

I. *The tissues.* 1. The integuments. 2. The cellular tissue, or fat. 3. The muscles. 4. The fibrous tissues. 5. The bones. 6. The mucous membranes. 7. The serous membranes. 8. The glands. 9. The nervous tissue. 10. The vascular system.

II. *The organs.* 1. The lungs. 2. The spleen. 3. The liver, kidneys, &c.

III. *The fluids.* 1. The blood. 2. The urine.

The principal interest of the present work consists in the minuteness and apparent accuracy with which the author describes the pathological changes he has observed. His descriptions agree very closely with what we have observed ourselves, and we do not perceive that he offers anything very novel or original, even in his theories, some of which date from Cullen and the older pathologists; while he has fallen, very extensively as it appears to us, like many of his predecessors, into the error of confounding the morbid changes, due properly to other affections, which have happened to be concomitant with scurvy, with those belonging simply to that affection. This error is committed especially with regard to some forms of cutaneous eruption, which, although merely modified by the scorbutic diathesis, he is inclined to consider as peculiar to that affection.

He describes the true scorbutic affections of the skin with great accuracy and minuteness. Under the head of changes in the cellular tissue, he describes the effusions as they occur in the cellular and fatty tissues, under the skin, and among the muscles, and under this head enumerates four sorts of effusion.

“1. Effusion of serous or sanguinolent fluid in the subcutaneous cellular tissue, which may be distinguished from the œdema arising from other causes, by its greater hardness—which approaches that of wax, and by the length of time it retains the impression of the finger, and also by the situation of the parts in which it usually commences, which are not always the most dependent portions of the limbs. The swelling depends upon the effusion of a fibrinous and serous fluid

more or less tinged with the colouring part of the blood into the subcutaneous cellular tissue.

"2. Circumscribed swellings in various parts, as the consequence of slight injuries or of violent muscular exertion.

"3. The changes which occur in the adipose tissues.

"4. The more important of the effusions caused by scurvy are those which occur in the intermuscular and subfibrous cellular tissue. These consist either of a sanguinolent fluid, or of thin layers of coagulated blood situated in the interstices between the muscles or on their immediate surface, and which are readily removed, or there are bloody-coloured layers of a gelatinous consistence, marked with streaks of a yellowish white, resembling sometimes blood coagula or the fibrinous clots met with in the heart. The muscles bounding these effusions, are infiltrated with blood, and their substance is weakened in consequence, the fibrous tissue being scarcely apparent. Lastly, we find these intermuscular deposits in another form, in which they exhibit a higher degree of organization than the above. Deposits of this kind occur in the form of layers of from a quarter of a line to a line in thickness, and are composed apparently of *fibrine* of a bright or yellowish red colour, firm and elastic and affording no fluid on pressure. They are true false membranes, and are quite distinct from the surrounding muscles to which they firmly adhere. This kind of deposit has been termed 'scurbutic formation,' by Dr. W. v. Samson, in an unpublished work. They occur not only under the fascia and between the muscles of the extremities, but also between the broad expansions of the abdominal and pectoral muscles. The stiffness of the joints and especially of the knees, appears to be caused by the firm consistence of these effusions; and the muscular pains, are probably caused by the position they occupy and by their pressure, and to them also may in part be attributed the hardness of the limbs. They exhibit the physical properties of fibrine, from which all fluid has been removed, and as it occurs in false membranes." (p. 25.)

In the fibrous tissues and bones the principal appearances adverted to are the occurrence of effusions in the external surface of the periosteum and between that membrane and the bone (scurbutic nodes.) With regard to these nodes it is truly remarked, that they differ in several respects from those arising in consequence of syphilis. "They are formed much more rapidly and are attended with marked nocturnal exacerbation of pain."

We have referred rather at length to the author's description of this last class of effusions, or those which occur between the muscles and beneath the periosteum, for the purpose of remarking, that it serves to strengthen an opinion we have long been inclined to hold, that the effusions which occur in scurvy are not caused, as is commonly supposed, simply by extravasation of blood.

These effusions, or, as they are styled by Dr. Samson, "*scurbutic formations*," and also those which cause the swelling of the gums, can, we think, be more properly considered as effusions of organizable fibrine, than as blood coagula, admitting of vascular organization. Upon injection these effusions will be found to be very richly furnished with capillary vessels, which in their character and mode of distribution are so perfectly similar to the newly-formed capillaries in other recently organized adventitious tissues, that they cannot fail to be recognized as of the same nature.

This point is alluded to in a paper by Mr. Dalrymple, in the 'Medico-Chirurgical Transactions,' who has subjoined a figure representing the distribution of the capillary vessels, injected in a deposit of the nature we are

describing, which was situated beneath the periosteum of the liver in a man who died of scurvy. It might be considered that the effusion in this case depended upon simple periostitis or osteitis, in a scorbutic subject; but the nodes during life were so precisely of the character of those frequently met with in scorbutic patients, numerous instances of which have more recently fallen under our observation, that there is no reason to suppose that they depended on any other cause than scurvy. We have in many instances seen this sort of node in cases where no suspicion of syphilis was admissible, and in whom no mercury nor any previous affection of any kind could be considered their cause. Besides this, we have had an opportunity of injecting a limb which was the seat of extensive scorbutic effusions, and these were found even in the interior of the knee-joint. The solid material in the latter situation was partly adherent to the synovial surface and partly loose. The former portions were all more or less injected, the latter not; but in both instances, the masses on examination by the microscope exhibited numerous corpuscles, advancing, according to the opinion of Mr. Dalrymple who examined them, to the stage which precedes organization in fibrinous effusions.

Leaving, however, these artificial proofs, if they may be so considered, out of the question, let us consider the nature and extent of the peculiar condition of the gums in scurvy, and it will probably be allowed that this hypertrophy, as it may in reality be called, can only be caused by the deposit in the tissue of a plastic material. The swollen gums are firm, and evidently organized. They are sensible, and bleed when wounded, and the swelling admits of the most rapid absorption, as in fact do all solid scorbutic effusions. The remarkably circumscribed extent also of the affection of the gums precludes the probability of the swelling being caused by simple effusion of blood or other fluid into their tissue, but would apparently serve to strengthen the supposition that the additional matter is of a solid nature. These considerations, and others which it would require too much space to adduce, lead us to conclude that most of the effusions which occur in scurvy are not really of blood as such, but that they consist of a plastic fibrinous matter coloured with blood.

The error of confounding various pathological changes, modified by the scorbutic diathesis, with those properly belonging to that disease alone, is very evident in the section which treats of the affections of serous membranes. The morbid changes observed in this tissue are referred principally to the pleura and pericardium, and appear to have been met with very frequently in a peculiar epidemic which occurred in and about Moscow chiefly in 1840. This epidemic, whatever was its true nature, was characterized by a remarkable predominance of pericardiac and pleuritic effusions; for out of 66 cases dissected by Dr. Karawajew, Pericarditis occurred 30 times; Pleurisy, 22; Pericarditis and Pleurisy, 6; Peritonitis, 7; Arachnitis, once. But it does not appear at all clear that these effusions were caused by scurvy, though it is evident, from the modified appearances they presented, chiefly as regards their colour, that those who were thus affected laboured under a scorbutic diathesis. The operation of *paracentesis* of the pericardium appears to have been several times successful, and many cases are given in detail.

We have seen many cases of death from pure scurvy, but have not ob-

served any effusions similar to those described by Dr. Himmelstiern in the various serous cavities.

The only affection of the pulmonary tissue which the author appears to consider, as peculiar to scurvy, is a more or less extensive infiltration of it with black fluid blood, effused in equal quantity on the anterior and posterior parts, and which is attended with a remarkable friability and dark colour of the whole tissue. The sound on percussion, he says, is scarcely affected in this condition of the lung, but auscultation detects a rough respiratory murmur. He has also occasionally observed a blowing sound, which he attributes to the arteries. Part of the dyspnea, which is so distressing in scurvy, he believes to depend upon this congestive state of the lungs.

The *spleen* was formerly thought to be usually much affected in scurvy, but it is clear that for this opinion there are no sufficient grounds. A morbid appearance of this organ is described, however, as having occurred to the observation of the author and others; viz., the presence of wedge-shaped bodies on its surface, and which he considers as analogous to the superficial hepatization of the lungs, and to be caused either by fibrine deposited, in consequence of the morbid condition of the blood, or to a process connected with phlebitis—a point which he thinks might be determined by micro-chemical examination.

Nothing remarkable appears to have been met with in the other solids. The author considers a nodulated and contracted condition of the liver (cirrhosis) to be an occasional *cause* of scurvy, which in such cases is attended with great enlargement of the spleen.

The condition of the blood in scurvy has been so differently described by various authors, and their descriptions have been so evidently drawn rather from the peculiar tenets of the pathological school to which the writers have belonged, than from nature, that it would be impossible to gain correct notions on the subject from them, and especially from any of the older writers, by whom in turn all imaginable qualities have been attributed to the scorbutic blood. Dr. Himmelstiern thinks that some of these discrepancies may be reconciled, by supposing that the condition of the blood may vary materially, according to the stage of the disease at which it is observed, or according to the affections with which it may be complicated. He considers that in consequence of the separation of the fibrinous element in the various effusions, the blood becomes impoverished in the latter stages of the disease, and assumes a dissolved, incoagulable character.

We would only remark upon this supposition, that in several examinations of the blood of persons labouring under scurvy in a severe form, we have uniformly found the proportion of fibrine and salts and water to exceed the average, and that of the hematosine to fall below it. Blood drawn in scurvy has, in all the cases in which we have tried the experiment, formed a small firm clot, usually buffed and sometimes cupped; but to assert that this will be found universal, would be so directly to contradict the observations of many others, that we cannot venture to do it.

As the author does not professedly treat of the prophylaxis, or cure of the disease, we can only gather from incidental notices in the accounts of some cases, which he has subjoined at the end of the book, what his principles and practice are in these respects. Upon these we have already ex-

pressed our opinion, and we cannot but regret that he has not profited more in these respects from his study of English authors, with whose works his frequent references to them prove him to be well acquainted. The experience of half a century has, at all events, shown that whatever may be our real knowledge of the pathology of scurvy, we have in this country known how to cure, and, what is more, to prevent it; and, if we might so far presume, we would suggest to Dr. Himmelstiern that labour and talent equal to that which he has displayed in this interesting work on the Pathology of Scurvy, if devoted now to its Etiology, prevention and cure, would doubtless meet with commensurate success; and that from his endeavours would accrue the same advantages to the Russian naval service as have resulted from the sagacious example of Cook, and the scientific exertions of Lind, of Trotter, and of Blane, to that of Great Britain.

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#### ART. XIV.

*A Treatise on the Forces which produce the Organization of Plants. With an Appendix, containing several Memoirs on Capillary Attraction, Electricity, and the Chemical Action of Light.* By JOHN WILLIAM DRAPER, M.D. Professor of Chemistry in the University of New York. With Four Plates.—New York, 1844. 4to, pp. 324.

THE handsome volume before us is by far the most original contribution to physiology and its allied sciences, that we have ever received from the American press. Dr. Draper has long been known to scientific men on this side of the Atlantic, as a most industrious and sagacious explorer of that fertile province which lies between physics and physiology. The papers which he has published, from time to time, in our scientific journals, have given evidence of his skill as an experimenter, and of his acumen as a reasoner. We have rejoiced, therefore, to see that they seemed likely to aid in the unravelling of those mysteries, which the physiologist continually encounters in the prosecution of his researches into the dependence of life upon external conditions. And we were prepared to give a hearty welcome to the present treatise, which embodies the physiological inferences to which the author has been led by his experimental investigations.

Unlike too many who call themselves chemical philosophers, our author has thought it incumbent upon him to make himself acquainted with the present state of opinion upon physiological subjects, as taught in the best schools; and to take this as the groundwork of his arguments. Consequently we have nowhere encountered, in perusing his treatise, those hasty assumptions and sweeping generalizations, which disfigure the works of too many of our scientific reasoners. On the contrary, we have been struck by the clearness and accuracy of his views on physiological subjects; indicating, we think that he has not taken them upon trust from others, but has made them his own by independent observation. The style of the work is something more ornate than we are accustomed to expect in a grave philosophical treatise; but we do not know that it is the worse for this, as the clearness of its statements and the closeness of its arguments do not seem thereby impaired.

Owing to the many other topics which crowd upon our attention, we must content ourselves with a much less full account of this work than its merits deserve; and must confine ourselves to those departments of it which have an especial bearing upon animal physiology. From the introductory chapter, containing general remarks on the influence of physical agents on organization and life, we shall select a few disconnected passages, as specimens of our author's style and manner of treating the subject.

"In a philosophical point of view, it was the office of the 17th century to unfold the doctrine of universal gravitation, to assign proper causes for the motions of the celestial bodies, and to develop the great doctrines of astronomy. It was the office of the 18th to lay the foundations of physics and chemistry, or of that group of sciences which embraces the relations and reactions of atoms. It is the office of the 19th to discover the laws which obtain in the complicated structure of animated beings,—those laws which give rise to the mysterious phenomena which we call life." (p. 1.)

"In their origin, all those important ideas, which now constitute modern science, have been obscurely and imperfectly set forth. It is not given to the human mind, when it emerges from the darkness of ignorance, any more than to the human eye, when it emerges from physical darkness into sunshine, to see all objects which are before it, in their proper aspect and position. A period of time must elapse, during which we become accustomed to the light." (p. 2.)

"Each one of the various changes in the universe, no matter whether it concerns organic or inorganic nature, has been the result of the action of some determining cause. The countless systems of phenomena, which have arisen, are all connected together as systems of effects. In a web, as it passes from the loom, the different threads interlace with one another; and though we soon cease to identify each, as it pursues its sinuous way, we know that the last is connected with the first: and in the web of nature, each event has been brought into relation with others that have gone before it, and others that have succeeded it, and all are intertwined together, as a series of causes and effects." (p. 4.)

"From the day when organization first commenced on the surface of the earth, the law which it has followed has been a law of progress and of evolution. A myriad types of life have been created, and myriads of living forms produced; and the last is the highest. Even with us the same thing is going on; advances in knowledge are advances in power. The civilized man of these days is a wholly different being from the man who lived a thousand years ago; and the conditions which determine his position have totally changed. With us, the position both of empires and of individuals is fixed by the possession of knowledge,—knowledge which is incessantly on the advance. Wherever intelligence has been given, there is a requirement to join in the advancing march. The Indian stands still, and the penalty is death." (p. 8.)

"From these considerations, therefore, we may gather that the laws of nature contain provisions for the extinction and removal of successive races; operations which are carried on by the action of physical powers. As the death of an individual arises from the action of external agents, so, in the same manner, does the disappearance of a tribe: and hence we see that, as existence is under this control, it cannot take place except when physical circumstances conspire; as they change, so, also, must the various forms of life undergo corresponding mutations." (p. 8.)

"What, then, are the final impressions left upon our minds by these general considerations? They teach us that Life never occurs except in regions to which the imponderable agents can have access, an observation which is equally true of vegetable and of animal forms; that elementary organization directly or indirectly arises from the plastic energy of those all-pervading forces. Whether we consider

the organic or inorganic world, all things around us are in incessant changes,—changes which result from the fixed operation of invariable laws; that, of the successive tribes of beings which have peopled our earth, each series may be regarded as expressing the general relation of all physical agents at the time of its existence, the brilliancy of the sun, the pressure of the air, and other such conditions; for we see that, between those conditions and the organization of the structures considered, there are fixed relations; that in the more highly complicated forms of being, mutations more readily take place, and in all, time enters as an element; that in the same way that whole races have disappeared from the face of the earth, and have become extinct, so also, do individuals die and atoms change; that whatever motion is accomplished, or whatever change is brought about, there is a consumption of material or an expenditure of force; that, as the surface of the earth is continually remodelled by physical agents, so are the vicissitudes through which organized forms pass determined by physical powers, and bring about physical ends. The passage of a comet, never more to return, in a hyperbolic orbit past the sun, is a result of the same general law that keeps a planet revolving in the repeated circles; the extinctions of races which have heretofore taken place, or which are going on before us, are not brought about by a direct intervention of supernumerary forces, but are the constant results of those which are always in action. If, moreover, our thoughts are directed to the relations which exist between climates and the character of races, the distribution of vegetables and animals; if we observe the antagonization of these great classes in the result of their vital processes, their position as respects the atmosphere, the control which astronomical events possess over everything, the action which currents in the air or currents in the sea exercise over the distribution of animated forms, and even over the well being of man, we surely shall have but little difficulty in understanding that, as in the inorganic world, so also in the world of organization, those all-pervading forces, which natural philosophers and chemists recognize, are constantly employed." (p. 14.)

To determine the operation of the imponderable agents upon the development of organized bodies, and especially upon that of plants, is the special object of Professor Draper's treatise. To say that he has been altogether successful, that his researches have exhausted the subject, or that some of them may not be hereafter set aside, would be to go far beyond his own estimate of the merits of his production. "Future discovery," he says (p. 2,) "in its progress, may show that, of the facts brought forward in this volume, many are misplaced, and many misapplied; these are incidents to which all philosophical works are liable. But if it should happen that anything contained herein shall aid in fastening the attention of men of science on the idea which it is designed to impart, the author will have received his reward, and the labours of ten years will not have been entirely thrown away." We may not altogether agree with our author, as to the degree of novelty which his conclusions possess; many of them, we believe, having been long familiar to the minds of vegetable physiologists of the Old World. But we must do him the justice to state, that they are here set forth with a degree of precision which may be in vain looked for elsewhere, and that the mutual connexions of a large number of isolated facts in themselves familiar, are more fully elucidated than we have ever seen them before.

The first chapter contains a general account of the *action of the sun-beams in producing organized bodies*; sketching the influence of light on the processes of vegetation, from the development of the green flocks which are produced in spring water when exposed to the sun, or which



cover damp surfaces, to the digestive functions of the leaves of more perfect plants, by which the carbon that is to be incorporated in their structure is obtained from the atmosphere. As we do not find any novelty in the contents of this chapter,—although we are bound to praise the lucid manner in which the subject is treated,—we shall pass on to the next, in which the author puts forth his views respecting the mechanical cause of the flow of the sap in plants, which he regards as fully explicable on the known principles of capillary attraction, and as analogous in its essential conditions to the circulation of the blood in animals. The physical phenomena of capillary attraction are treated in full in the appendix; which contains a valuable series of papers, on topics bearing on physiology, that have been at different times communicated by Dr. Draper to scientific publications. We must content ourselves with here concisely stating the *results* of his inquiries.

When one extremity of a small glass tube, open at both ends, is immersed in water, the water rises in the tube, to a height which bears a certain proportion to the bore of the tube. If it be immersed in mercury, however, the surface of the mercury within the tube is depressed; and the same result follows, if the interior of the tube be smeared with oil, and it be then immersed in water. “The physical law under which these elevations and depressions take place, is very simple and easy to be remembered. If a liquid can *wet* the surface of a solid, it will rise in a tube formed of that substance; but if a liquid *cannot wet* a solid, it will be depressed below its true level in a tube formed of that substance.” Under no circumstance, however, will ordinary capillary action occasion a continuous flow from the top of a tube; for the liquid, having attained the highest possible elevation, remains there. But, if by evaporation (as in the case of an uncovered wick of a spirit-lamp,) or by chemical action or other processes (as in the combustion of oil in the wick of a lamp when lighted,) the superficial portions of the elevated liquid be removed from the extremity of the tube, a continuous flow up to that point will take place. These facts, which have long been recognized, are introduced, both by our author and ourselves, merely as preparatory to a higher order of phenomena,—those which are grouped under the name of endosmose. From his investigation of these phenomena, he deduces the following important law,—important not merely in itself, but from its bearing on physiological questions. “When two different liquids are brought in contact in a porous solid, which is wetted by both, but by them unequally, that one which has the greatest affinity for the solid, or which wets it most perfectly, will pass most rapidly through it, and may even drive the other entirely before it.” This passage is not accomplished with an insignificant force. Direct experiment shows, that water will thus pass into alcohol, through a pervious membrane, with a force equal to the pressure of nearly two atmospheres. As a mechanical agent, capillary attraction, therefore, is fully able to overcome any of the resistances which it has to encounter in elevating sap to the tops of the loftiest trees, or in driving blood to the remotest parts of large animals.

In Prof. Draper’s opinion, capillary attraction is itself but a result of electric action; and he brings forward many interesting facts in support of this view. We must pass by the subject, as being a question of physics,

not of physiology; with the observation, however, that even though we may not be altogether prepared to assent to this position, we believe that those who have most attentively studied the molecular forces of bodies will be ready to admit the close relation between capillary attraction and chemical affinity; which is the point that Dr. Draper seeks to establish. Consequently the following modification of the principle just now stated, may be received as possessing a high degree of probability. "*If two liquids communicate with one another in a capillary tube, or in a porous or parenchymatous structure, and have for that tube or structure different chemical affinities, movement will ensue; that liquid which has the most energetic affinity will move with the greatest velocity, and may even drive the other fluid entirely before it.*" (p. 29.) We shall not stop to examine the application of this principle to the circulation of elaborated or *descending* sap in plants; because it does not appear to us to account very satisfactorily for its phenomena,—of which, indeed, we know very little. The *ascent* of the sap had been previously well explained on the physical principles applied to it by Dr. Draper. But we shall pass on to consider the explanation it gives of the movement of the blood in the capillaries of animals. We shall briefly follow Prof. Draper through his examination of this subject; and shall defer our own remarks upon it until its close.

The circulation in man (which, being most complex, may be regarded as including the phenomena of the circulation in general) may be considered under three heads,—the systemic, the pulmonary, and the portal. —The *arterial* blood, passing through the systemic capillaries, has a special affinity for the tissues through which it is transmitted; producing their oxydation, by the relinquishment of its own oxygen, which may be looked upon as its active principle. The *venous* blood, on the other hand, has little affinity for the structures with which it is in contact; the affinities of the arterial blood having been satisfied by the combustion of the tissues through which it has passed. According to the principle already stated, therefore, the arterial blood in the systemic capillaries will drive the venous blood before it, with a considerable amount of force. In the pulmonary circulation, on the other hand, the relative condition of the blood and the capillary channels is exactly the reverse. "We have here venous blood presenting itself on the air-cells, no longer presenting itself to carbonaceous or hydrogenous atoms, such as constitute the soft solids, but presenting itself to atmospheric air, or more truly to oxygen gas itself, which, being the more absorbable of the constituents of the air, is taken up and held in solution by the moist walls of the air-cells." This case, then, is precisely the converse of the former; since the stronger affinity is here between *venous* blood and the walls of the capillaries, so that the venous will drive the arterial blood before it. "Had we, therefore, known nothing of the circulation in the higher order of animals, but been instructed in the chemical relations of the blood to the soft tissues and atmospheric air, we could, upon physical principles, have predicted the existence of that circulation, and shown what its direction in different organs must be." In the portal circulation there are two forces at work, besides the impulse which the blood in the portal vein already possesses, by its transit through the capillaries of the chylipoietic viscera. The blood which arrives in the liver by the portal vein, undergoes a chemical

change in that organ, the constituents of the bile being separated from it; and when the affinities which have been at work in producing this action have all been satisfied, the residue, which is inert *quoad* the liver, becomes the venous blood of the hepatic veins, and is consequently driven through the portal capillaries by the portal blood, whose affinities are yet to act. But besides this cause of movement, there is another, resulting from the operations which take place in the capillaries of the hepatic artery; these operations are upon the same footing with those of the systemic circulation in general, and will consequently give to the whole mass of the blood in the portal capillaries (into which the blood of the hepatic artery appears to be poured) a movement towards the vena cava.

Many physiologists (ourselves among the number) had arrived, before Dr. Draper took up the subject, at these conclusions in regard to the capillary circulation;—that it is in great part carried on by forces generated during its own continuance; and that the amount of these forces, determining the rate of movement of the blood, depended upon the activity of the actions going on between the blood and the tissues. Dr. Alison had further advanced the hypothesis, that a series of “vital attractions and repulsions” exists between the blood and the solids; the effect of which would be, to draw the particles of blood *towards* the solids, so long as they have not come into close relation with them, and afterwards to repel them. The idea of a series of attractions and repulsions, as the operating cause of the capillary circulation, was admitted by Dr. Carpenter; but he did not see reason to regard them as essentially distinct from those which operate in physics and chemistry. In Professor Draper’s investigations, as it seems to us, a very striking confirmation of this last form of the hypothesis is to be found. He has shown that, admitting a difference of chemical relation between the arterial and venous blood, respectively, and the tissues through which the circulation is taking place, a movement of fluid must take place in a determinate direction; and that the direction of this movement is precisely that which we should expect, from our knowledge of the affinities in question, at least in the systemic and pulmonary circulation. The only error which we have to notice, is one which does not at all affect his *principle*, but which requires a modification in its application. Dr. Draper seems as if he regarded the affinity between the oxygen of the arterial blood, and the carbonaceous and hydrogenous atoms which are ready to be burned out of the tissues, as the *only* one involved in the production of the movement. For anything that he says to the contrary, we might suppose that arterial blood is *merely* a carrier of oxygen to the tissues; and the venous blood a return carrier of carbonic acid and water. We believe that this simple kind of action is what *does* obtain (of course under a reversed form) in the *pulmonary* circulation; that is, that the discharge of carbonic acid and the imbibition of oxygen are, on the principles enunciated by Dr. Draper, the essential causes of the motion of the blood through the pulmonary capillaries, in a direction from the venous towards the arterial side of the circulation. But the case is very different with respect to the actions to which the blood is subservient in the *systemic* capillaries; for the deoxygenation of the arterial blood, and the combustion-process in the tissues, constitute only one of a very complex series of changes, to which the blood is there subservient.

We think, therefore, that *all* these changes ought to be taken into the account; and that, when this is done, the theory will be as perfect as, in the present state of our knowledge, it can be well made.

Here we must lay down, for the present, this very interesting volume. A large portion of the remainder of it is occupied by an account of Dr. Draper's investigations into the mode in which *light* acts upon vegetables; and the varying operations, in this respect, of different parts of the solar spectrum. Inquiries upon this subject are now being actively prosecuted by experimenters in different parts of the world; but their results are not yet sufficiently accordant, to enable us to speak positively on the subject. We may hereafter take an opportunity of adverting to the subject; and shall for the present take our leave of Prof. Draper; expressing our thanks to him for the important contribution which he has made to physiological science, and our hope that he will continue to pursue the same line of investigation with increasing success.

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#### ART. XV.

*A Physiological Essay on the Thymus Gland.* By JOHN SIMON, F.R.S., Demonstrator of Anatomy in King's College, London; &c. &c.—London, 1845. 4to, pp. 100. With 53 Wood-Engravings.

THIS elaborate and beautifully-illustrated Memoir is the first-fruit of the liberal arrangement made in Sir Astley Cooper's will, by which a sum of £300 was to be given as a triennial prize for the encouragement of original investigations in Physiology and Surgery. The judges appointed to fix the subjects for investigation, and to decide upon the merits of the competing essays, not unnaturally or injudiciously selected, on the first occasion, a topic which had occupied the attention of the munificent founder of the prize; and about a year since they made their award in favour of the present Essay. During this interval the author has carefully reviewed his work, and has made various improvements in it,—having not only verified his former observations, but having also, in some instances, obtained additional evidence on points where he formerly had doubts.

We do not hesitate to affirm, that no more complete description is extant of any organ in the animal body, than that which Mr. Simon has here furnished in regard to this obscure and ill-understood part of the organism. He has not only carefully analysed its structure by the microscope, in animals in which it attains its highest development, but he has traced it through an extensive series of animals, including typical forms of most of the principal groups in which it occurs; he has also scrutinized its embryonic development, from the earliest period at which it is discoverable; and he has examined the structure of the spleen, thyroid body, and supra-renal glands, for the sake of comparison with it. We must content ourselves with briefly stating the conclusions at which he has arrived; these are not merely interesting in themselves, as affording a plausible solution of a *questio vexata*, which has much troubled anatomists and physiologists, but they are of much importance, from their bearing on the doctrines of general physiology.

We must pass over, for want of space, the historical introduction, prin-

cipally derived from the learned work of Dr. Haugsted (Copenhagen, 1832), in which a summary has been given of all that has been previously written, both as to the structure of this body and its supposed uses. The history is not uninteresting, however, as showing the futility of theorizing, as to the functions of this body, upon such imperfect knowledge of its structure and relations as our forefathers possessed. Sir Astley Cooper's work is deservedly praised, as having "finally fixed the correct view of the structure of the gland as completely as could be done without the use of the microscope." But the recent *perfectionnement* of that instrument, and the introduction of new views in regard to the constitution and actions of glands, founded on its revelations, have opened a novel field of research, which had been scarcely upturned in this quarter, previously to Mr. Simon's investigations.

The embryonic development of the thymus gland takes place nearly upon the same plan with that of glands in general. "By the naked eye, or with the assistance of a simple lens, its existence may be distinctly ascertained in foetuses of about an inch and a half in length; and by careful manipulation it may be followed under the microscope in its earlier stages, even in embryos little more than half an inch long." The earliest form which Mr. Simon has been able to discover is that of a simple tube, closed at *both* ends; the walls of which consist of a very delicate homogeneous membrane; whilst its cavity contains granular matter. From certain appearances presented by this tube, he considers it probable that it is formed by the coalescence of a linear series of cells. Even at this period, therefore, the essential analogy and the essential difference between the thymus and other glands are manifest; for the latter, however complex they subsequently become, are first to be traced as simple tubes or follicles; but these are closed at *one* end only, and open at the other on some mucous surface. In the subsequent development of the thymus, the regular type of glandular production is followed; for it essentially consists in the *lateral growth of branching diverticula from the central tubular axis*. In the mature thymus, the primary tube, although it has increased *pari passu* with the growth of the region to which it belongs, is yet so hidden and eclipsed by the disproportionate bulk of its follicular extensions, that many anatomists have overlooked its existence or real nature, and have described the whole body as consisting of an aggregation of independent vesicles. Hence the result at which Mr. Simon has arrived, by the study of the embryonic development of the thymus, corresponds with that which Sir A. Cooper had obtained by the artificial distension of its cavities; but it corrects the latter in one particular—viz., as to the proportional size of the central cavity, or "reservoir" of Sir A. Cooper, which is not so great as was represented by him to be; the appearance of a large cavity having been artificially produced by the means employed for expanding and exhibiting the interior structure of the body.

The investigation as to the period of greatest development and activity of the thymus is one of much physiological importance. The usual idea on this point has been, that its greatest bulk is attained during the latter part of embryonic life; and that it must consequently exercise its chief functional activity during the intra-uterine period of existence, and have reference to the peculiarities of fetal life. The researches of Dr. Haugsted,

however, afford most convincing proof that this is an error; since not merely the *absolute*, but the *relative* size of the gland undergo a great increase after birth. Thus, whilst the weight of a dog's thymus at birth may range up to *ten* grains, we find it subsequently increasing with such rapid paces, that after five months it weighs nearly *four hundred*;—a proportional increase of *forty* times, whilst the weight of the entire animal has increased only *twelve* or *sixteen* times. The data collected by Mr. Simon on this point fully confirm those of Dr. Haugsted; and he is, in consequence, fully justified in the statement that "the thymus can with no more propriety be referred to the needs and uses of foetal life, than the mammae of the female can be considered subservient to the period of uterogestation." In the human subject it appears that, during the period immediately succeeding birth, the activity of the growth of the thymus is greater than that of the body in general; and its functional energy seems then at its greatest. This rapid state of growth, however, soon subsides into one of less activity, which merely serves to maintain the proportion so acquired; and its absolute increase usually ceases at about the age of two years. From that time, during a variable number of years, it remains stationary in point of size; but, if the individual be adequately nourished, it gradually assumes the structure of fat,—a curious change, which, as will presently appear, is still more remarkable in certain other animals. The duration of its decay, and the epoch of its entire vanishing, are so uncertain, that no general statement can be made regarding them. Its principal loss of substance appears usually to take place about the period of puberty. The size of the thymus at each period, in proportion to that of the entire body, seems to undergo considerable variation, in accordance with the general activity of the nutritive functions in the individual, and with the amount of waste occasioned by exercise of its muscular tissue. Thus it is stated by Mr. Simon, that where the weight of the whole body at birth exceeds the average, the weight of the thymus exceeds the average in a disproportionate degree; whilst, if it be beneath the average, the thymus is disproportionately small. And it was long ago observed by Wharton, that if a young ox be put to the plough, the disappearance of its thymus is much accelerated. Mr. Simon is even disposed to believe that a great variation in its bulk may take place in the same individual within a few days, if not hours.

From the foregoing facts it appears that the thymus is to be regarded as an organ characteristic of the period of *growth*, or of that in which there is an excess of nutrition over waste. But it is no more possible to fix by a general rule, for all species, and for all individuals, the exact duration of its existence, or the date of its chief development, than it is to express in numerical terms the precise extent of that period of growth to which its usefulness applies. In proportion as the muscular powers of the system become vigorous, and the activity of the merely nutrient operations diminishes, in that proportion do we find the thymus disappearing. This is apparent, not only from the comparison of different individuals of the same species, but also from the comparison of the classes of birds and reptiles; for as the former are distinguished by the *lowest* and the latter by the *highest* activity of respiration and muscular movement—so do we find in the former the longest persistence of the thymus, and in the latter its quickest departure.

We have now to speak of the minute structure of the gland in its mature state; and of the nature of the fluid found within it. The terminal vesicles, all of them communicating with the central tube or axis, are composed of a delicate homogeneous membrane, the basement-membrane of Mr. Bowman; whilst they are surrounded by a close capillary network, which lies in contact with the outer surface of the membrane, and is adapted to its various inflexions. The cavities of the vesicles contain a fluid, in which, as Hewson discovered, an immense number of microscopical corpuscles float. These corpuscles, which are about the size of those of the blood, are generally of discoid form, and seem rather to deserve the character of nuclei or cytoblasts, than that of cells. In specimens taken from animals past that period of life when the thymus is most active, Mr. Simon states that he has found cells, to which these dotted corpuscles presented the relation of nuclei; these cells are at first little larger than the corpuscles themselves, and contain a perfectly pellucid material; but as they grow, their contents become molecular, and they develop themselves into perfect fat-cells, which lie in the cavities of the gland, and in some instances completely fill them. The presence of fat-particles in the ordinary corpuscles appears to be indicated by the existence of a variable number of minute markings in each, giving to them a dotted appearance; these markings may present themselves as dark spots, to the number of two, three, four, or even five; or there may be only a single one, which is then found proportionably large, and possesses a high refracting power, like that which oily particles elsewhere exhibit; chemical analyses of the gland at the period of greatest activity, however, give but very slight traces of fat; both proximate and ultimate analysis accord in giving to its substance and contents a composition nearly allied to that of blood and muscle. This fact is of considerable importance as demonstrating the incorrectness of the theory of Tiedemann, Arnold, and others, that the office of the thymus is to separate, during intra-uterine life, a carbonaceous product from the blood, and thus to take the place of the respiratory organs in depurating it. The actual and ultimate nature of the secretion of the thymus, (so far as it can be ascertained,) is expressed by the formula for proteine; or, in other words, is nutrient matter.

The fourth chapter contains an elaborate account of the "Comparative anatomy of the thymus gland;" which Mr. Simon has ascertained to exist, not merely in mammalia, to which it was formerly supposed to be restricted, but also in birds and reptiles. Below the last-named class, however, he can discover no traces of it. It is in the hybernating species of the order Rodentia, that we find the greatest peculiarity in regard to this body. Instead of disappearing as the animal advances towards adult age, it seems to continue to increase; being found in the marmot not only to surround the base of the heart, but also to extend itself into the axilla and posterior mediastinum. But in this, as in other cases in which the thymus becomes a permanent organ, it does so under an altered character; namely, by a singular and striking transformation of its ultimate elements,—"*by developing its natural cytoblasts and fluid contents into a system of nucleated fat-cells, held within a limiting membrane.*" In the animals which hibernate less completely, these voluminous organs are not so fully developed; and in those which pass the winter in a state of activity, they are absent,—the thymus being merely a "temporary organ, as in other mammalia."

The existence of a thymus in birds was first asserted by Meckel; but the organ described by him under this name is stated by Mr. Simon to have none of the characters of the true thymus, and to consist of nothing else, even in the youngest specimens, but ordinary adipose tissue. But having detected this fallacy, he has also adduced satisfactory evidence of the real existence of a thymus in birds, although it never reaches a high grade of development, and presents, in fact, a form quite rudimentary, —that of a semi-transparent ampullated tube, following the line of the superficial cervical vessels, and containing the characteristic dotted corpuscles of this organ in the mammalia. Its development appears to stop, and its functions to cease, at a very early period. The physiology of the thymus is said by Mr. Simon to be better illustrated in the class of reptiles than in any other; yet there has been the greatest misapprehension on the subject. The real thymus has been described as a thyroid gland, and *vice versa*; and Becker and Haugsted, who profess to have thoroughly examined the parts referred to, agree in positively denying the existence of a true thymus in reptiles. According to Mr. Simon, "the careful employment of the microscope in practised hands, for investigations of this nature, precludes the possibility of error. The thymus and thyroid can be no more confounded with each other, or with fat, than the liver and kidney can be mistaken for each other or for muscle. The tubulovesicular structure of the thymus, the vesicles of the thyroid, the distinct limiting membrane and peculiar contained corpuscles of each, will serve to identify and distinguish these organs with *absolute certainty*." Generally speaking, the thymus of reptiles is large and persistent, and undergoes a metamorphosis into fatty tissue, as in the hibernating mammalia. The general rule of its connexion with pulmonic respiration holds good among the Batrachian reptiles, as in fishes. During the tadpole state or first condition of the frog and its allies, no trace of thymus can be detected; but as soon as the pulmonic respiration is beginning to be established, the organ makes its appearance. In those of the Perennibranchiate Batrachia, whose respiration is rather branchial than pulmonic, Mr. Simon has been unable to detect it. In fishes, after repeated and careful search in about twenty genera, he has been unable to discover any signs of a thymus; and there is no reason to believe that any analogous organ exists in the invertebrata.

The chief results of his comparative examination are briefly stated by Mr. Simon, as follows:

"1. *The presence of the gland* is coextensive with pulmonary respiration. 2. *Its shape and position* are variable and unimportant. 3. *Its size and duration* are, generally speaking, in proportion to the habitual or periodical inactivity of the animal. 4. Where it remains as a persistent organ, it is usually but one of several means for the accumulation of nutritive material; its continuance, under such circumstances, is generally accompanied—though, in some instances, superseded—by a peculiar accessory contrivance, the fat-body." (p. 64.)

In the fifth chapter, the morphology of the thymus is considered; its structure being compared to that of the true glands; and some important considerations being offered, in regard to the nature of its elementary operations. As already mentioned, it has much in common with true glands, both in its minute composition, and in the disposition of its parts;



but the corpuscles which its tubes and follicles contain are rather *cytoblasts* than perfect cells; and the cavity into which all the diverticula open is closed, instead of possessing an excretory duct. The following views in regard to the character and functions of the cytoblasts, although very different from those now generally entertained, have much plausibility, and merit an attentive examination.

"There are many reasons for believing that the so-called nucleus or cytoblast of a cell is its essential part, and capable of fulfilling by itself the entire functions which have been generally ascribed to the wall of the complete cell; and it is highly important for the physiological understanding of the glands without ducts, that the grounds of this belief should be examined.

"It appears that in the development of secretory cells, there are the following steps:—First, the formation of the nuclei;—Secondly, the deposition of material around them; which step seems the first evidence of their peculiar function;—Thirdly, the isolation of this material by the growth of a membrane around it,—in other words, the completion of a cell, which has now all its elements, nucleus, membrane, and contents;—Fourthly, a stage of apparent quiescence, during which the specific contents of the cell are probably either increased in quantity, or brought to greater concentration; a stage, in one word, of ripening;—Fifthly, the falling of the cell with its contained material, in the form of excretion." (p. 70.)

It seems that, in ordinary glands, the cell-membrane is less completely formed than it is in most other instances; so that it more easily liquefies and sets free its contents; and in certain cases it seems altogether wanting, the nucleus, with the material developed around it, constituting the sole physical evidence of activity in the part. Hence *this* must be regarded (according to Mr. Simon) as the characteristic and essential part of the apparatus; and the presence of the cell-membrane must be considered as indicating that a certain degree of completeness has been attained. "The act of secretion, though essentially homologous with ordinary molecular nutrition, is peculiarly prone, in various cases and for various reasons, to exhibit its process of cell-growth, in a low and (as it were) aborted form." In the regular glands, the formation of the complete cell is the usual type of secretory nutrition; and though the exceptions are not unfrequent, they can be accounted for by the circumstances of local excitement or of general ill-supply, under which they occur. In the glands without ducts, on the other hand, the development of a perfect cell is exceptional. The following is Mr. Simon's summary of the characters presented by the process, in the four organs of this kind known to physiologists.

"In the malpighian glandules of the spleen,—where the secretion is fluid, and can but rarely be detected by the microscope in a molecular form, where the nutrition fluctuates from hour to hour, and where the assimilative affinities are therefore exerted with equal intensity only for the shortest periods,—a cell rarely, if ever, exists.

"In the thymus,—where also during infancy the secretion is fluid, and where the assimilative acts probably vary in intensity over short and frequent periods, the persistence of cytoblasts without cells seems at first sight equally regular. And such is actually the case during the time of the gland's most active function; but when it becomes comparatively quiescent, or when (as in many reptiles and some mammalia) it assumes the characters of a permanent organ, it will be found that its cytoblasts have undergone their complete development, and become nuclei of the fat-cells which are formed within the limitary membrane.

"In the tubes of the supra-renal glands where the product is solid, there is

constant opportunity of observing that transitional stage, in which the secreted matters are closely aggregated in a molecular form around the several cytoblasts; here, too, the completion of a cell is frequent.

"In the vesicles of the thyroid gland, owing to the fluidity of the secretion, no intermediate stage of cell-growth can be seen; but cells, taking the characteristic cytoblasts of the organ for their nuclei, are often developed, and may be seen to contain a fluid of the same nature as that wherein they float." (p. 84.)

Every one must perceive the interest which attaches to this comparison; and must feel that physiologists are indebted to Mr. Simon for a new method for reviewing these curious and perplexing bodies. Whether that method is the correct one, or whether it will have to undergo modification, as the inquiry is extended and made still more precise, it would be premature in us to offer any decided opinion; and we shall content ourselves with exhorting those who have facilities for the investigation, to follow up the same line of inquiry, in regard to the thyroid gland, the spleen, and the supra-renal capsules, which Mr. Simon has prosecuted so successfully with regard to the thymus.

The physiological conclusions arrived at by Mr. Simon, and contained in his sixth chapter, strike us as the least satisfactory part of his whole essay; yet it is no discredit to him to fail in effecting the complete solution of a problem, which has baffled so many of the greatest men in our profession: In justice to our author, we shall place before our readers a summary of his conclusions, and of the arguments on which they are based; and shall content ourselves with pointing out one or two difficulties which it does not explain, and offering one or two suggestions that may give a different direction to speculation. This we can do with a perfectly clear conscience; as we have no pet theory of our own to support, and shall only be too happy to be furnished with an hypothesis on the subject, that will fit *all* the facts.

Mr. Simon first draws a distinction, which is *not* without a real difference, between the "function" and the "use" of an organ. He defines the "function" as meaning that only which an organ does, viewed absolutely and alone; whilst "use" denotes this action viewed in its relations to the entire system. Thus the function of the stomach (that which it does) is to secrete a certain acid mucus; its use (the application of its function) is to reduce the food to a condition, in which its nutritive principles may be absorbed. The function (thus defined) of the thymus may be stated in these words:

"By means of an apparatus strictly analogous to that of true glands, it secretes into a closed cavity certain particular elements of nutrition. Further the secretion has been shown to occur differently under different circumstances; viz. (1) In most animals it occurs only temporarily. The secreted matter then presents itself in a *fluid form*, and is related to the universal material of nourishment, the liquor sanguinis, by the closest affinity of ultimate chemical composition. (2) In some animals, after discharging the temporary function, the gland gradually passes into the permanent exercise of a different, but analogous, act of assimilation, and manifests its secretion in the *solid form of fat*." (p. 86.)

In both these cases, the *function* is essentially the same, and consists in the secretion of nutrient material; the next question, the one which no examination of the gland itself can determine, but one in replying to which we must be rather guided by the general principles of physio-

logical science, relates to the *use* of this sequestration, and the purpose which the matter thus prepared is to answer in the system. In considering this question, Mr. Simon appears to us to fall into a very grave error at the very outset ; in regarding the condition of a young and growing animal as having any parallelism with that of a hibernating animal ; and more especially in supposing that there is a relation between them, in the reduction of the waste of the animal tissue to a minimum. Everything seems to us to indicate, that this waste is proportionably *greater* in the young animal than in the adult. The functions of nutrition are all performed with greater activity ; the quantity of food assimilated is far larger than is required merely for the increase of the fabric ; the molecular interchange is well known to be far more rapid, as is shown especially in the phenomena attending the reparation of severe injuries ; and the quantity of effete matter set free in the form of urea (which is, *cæteris paribus*, by far the best measure of the waste of the proteine-tissues) is very much greater during infancy and childhood, than it is in the adult, proportionably to the weight of the body at these periods respectively. With these well-known facts before him, we are surprised that Mr. Simon could have based his speculations, in regard to the function of the thymus, on so insecure a foundation.

Reasoning upon the supposed analogy in the condition of the young, and of the hibernating animal, Mr. Simon arrives at the conclusion that the thymus gland fulfils, in the first case as in the second, the office of a reservoir or sinking-fund of nutritious matter, for the supply of the respiration ; and this idea does not seem to him to be inconsistent with the fact, that the product of its separative action is a proteine-compound in the one case, and fatty matter in the other. For he considers that, in consequence of the small amount of *waste* in the tissues of young animals, the support of the respiratory process must chiefly depend upon the materials *directly* supplied by the ingesta ; and that as the fatty deposit in hibernating animals constitutes a storehouse of combustible materials, for the prolonged maintenance of the respiratory process, so will the thymus in the young animal keep the balance, amid the hourly changes in the relative amounts of the ingesta, the waste in the tissues, and the respiration, by separating respirable matter from the blood when it is superfluous, and yielding it up again when there is a demand for it.

Having pointed out what we deem the erroneous foundation of Mr. Simon's hypothesis, we shall not stop to discuss the hypothesis itself ; but need only remark that the balance in question must be required in the adult, nearly as much as in the young animal ; since all the variations of which he speaks are as well marked in the former as in the latter. Let us now endeavour to give to inquiry a more satisfactory direction. In the first place, it must be freely admitted, that neither the body in question, nor any other of the glands without ducts, can have for their office the separation of any elements from the blood, which are destined for immediate excretion ; since no channel exists for the deportation of the products of their action, except the sanguiferous system itself. The old idea that the lymphatics served as the excretory ducts of these glands, seems to be quite inconsistent with modern anatomical researches ; in regard to the thymus at any rate. Whatever be the action of this gland, therefore, its product

must be one that can be readmitted into the current of the circulation without injury. Secondly, the entirely different composition of its products, under the two conditions of its greatest development, seems to indicate that their "use" in the system is not the same. The conditions of young rapidly-growing animals, and that of hibernating animals, seem to us rather *opposite* than *parallel*. The former ingest a large quantity of crude aliment; the assimilating processes are extremely active; and the interchange of the ingredients of the tissues takes place so rapidly, that we cannot imagine that there can be any want of effete matter for respiration. *The demand here is for plastic materials.* On the other hand, in the hibernating animals, all the nutritive actions are at zero; and the respiration, for a long period, is entirely dependent upon the stores of fatty matter which has been previously set apart from the food. *The demand here is for combustible material.* Now the nature of the contents of the thymus, at the two periods, corresponds so precisely with the chief demand which we have shown to exist in the system, that the hypothesis of its being destined to supply these demands appears to us more plausible than the one proposed by Mr. Simon. We have compared it with his under all the circumstances to which he alludes; and we find it at least equally applicable. Take for instance the fact mentioned by Mr. Gulliver, "that in over-driven lambs the thymus will soon shrink remarkably, and be nearly drained of its contents, but will become as quickly distended again during rest and plentiful nourishment." And if the view, to which we have on several former occasions alluded, as to the influence of cell-life upon the production of fibrine from albumen, or, in other words, of the plastic from the non-plastic material of nutrition,—be founded in truth, we have in the thymus gland an organ for carrying on this function during the period when the greatest demand for plastic matter exists. As this demand becomes less energetic, the thymus diminishes in size and disappears,—the production of plastic matter within the absorbent and sanguiferous vessels being then sufficient for the wants of the system. Or if the organ remains, the nature of its "function" changes; and it cannot be deemed unreasonable to suppose that its "use" in the system should change also. In fact, that its "use" should be the same in the two cases, when its "functions" is so different, appears to us a very improbable supposition.

We cannot conclude without again thanking Mr. Simon for the very important contribution which he has made to that *real* knowledge of anatomy, upon which so much of physiological science necessarily rests; nor without saying, to our younger readers especially, "go and do thou likewise." The success which has attended this and other similar investigations, we regard but as an earnest of that which must result from the employment of similar methods in the examination of other parts. The time when a description of an organ with the naked eye, or with an ordinary magnifier, could be satisfactory to the anatomist, has long since past; and no monograph like the present can be in future accepted as complete, in which the microscopical and chemical analysis of the organ is not united with an investigation of its comparative structure in all the leading forms of animals that possess it.

## ART. XVI.

*De Thyrophymate Endemico per Nassoviam et Hessian Electoralem.*  
Dissertatio inaug. med. quam scripsit CAROLUS PHILIPPUS FALCK.—  
Marburg, 1843.

*Thesis on the Endemic Bronchocele of Nassau and the Electorate of Hesse.*  
By C. P. FALCK.—Marburg, 1843.

THE existence of bronchocele as an endemic disease in Nassau and Hesse appears hitherto to have attracted little attention, the only authors quoted by Dr. Falck being Dra. Mombert\* and Fleisch,† who severally described the disease as they observed it in the district of Wanfried on the Werra, and in the village of Nentershausen. The facts, however, collated by the author show that bronchocele is a frequent disease among the inhabitants of most portions of the two provinces, and in certain districts is endemic, to an extent scarcely less than in the valleys of Switzerland.

The data on which Dr. Falck has founded his estimate of the comparative prevalence of the disease, are deduced from the returns of the conscripts levied for the armies of the two principalities between the years 1831 and 1840, and 1836 and 1842 respectively. From these he has furnished tables of the number of men selected from each district and village annually; together with those who were found to labour under bronchocele so as to unfit them for service, or require their treatment previous to enrolment. The proportion which the goitrous bear to the whole of the conscripts being thus ascertained, he is enabled to estimate with considerable exactitude the number of persons in the general population of the several districts and villages, who probably labour under the disease, and to investigate the causes conducing to its development in each.

The following is an example of the mode of investigation adopted: in the bailiwick of Braubach, in the southern province of Nassau, the number of conscripts levied annually during the ten years were respectively 142, 131, 114, 126, 141, 140, 147, 130, 167, and 164, in all 1402, or a mean of 140·2 annually; and of these 37, or on the average 3·7, each year were found to be affected with bronchocele; the proportion of those labouring under the disease being to the whole of the conscripts as 1 to 37. Of the total population of this district, 11,092 in number, the proportion of those affected with goitre has been therefore estimated at 232. The population is distributed in 19 villages, and the conscripts levied from 13 of these numbered a larger or smaller proportion of the goitrous: thus in the village of Fachbach, containing a population of 411 inhabitants, 5 conscripts are selected annually (1 to 80 inhabitants,) or during the 10 years 50; and of these 7, or more than  $\frac{1}{4}$ th, were found to labour under bronchocele; and consequently it has been inferred that the disease is endemic in this village. The lengthened period over which the returns extend obviates the fallacy which might be occasioned by a casual occurrence of the disease, and in many instances the rejections of goitrous persons are found to recur year after year; thus in Weilburg, in the eastern portion of the southern province of Nassau, goitrous persons are returned in 8 out of the 10 years. The greater liability of females to the affection, which when the

\* Hufeland's Journ. B. 77. Sept. 1833, p. 90.

† Handbuch über die Krankheiten der Kinder, etc. 3. B. Leipzig, 1807, p. 358.

disease is of less frequent occurrence, certainly obtains, (as in England,) does not, from Dr. Falck's observation at Ockershausen in Hesse, appear to exist in those districts. He has indeed satisfied himself of the general correctness of his mode of investigation; though the returns must be regarded as indicating a prevalence of the disease less than that which really exists; rejections of goitrous persons often taking place in consequence of their being below the required standard, or on account of some other malady with which the disease is conjoined; and thus it occasionally happens that in villages in which the disease is known to be endemic no persons are returned as rejected on this ground.

I. *The endemic bronchocele of the duchy of Nassau.* The duchy of Nassau, situated on the left bank of the Rhine, is divided into two provinces by the river Layne. In both of these the country consists of elevated plains intersected by deep valleys and mountains. The southern portion or Taunus is situated between the valleys of the Layne and Mayne; its highest peak the "Grosser Feldberg" attains a height of 2721':\* this mountain range descends abruptly towards the valley of the Mayne on the south, while to the west and north it sinks more gradually towards the Rhine and Layne.

The northern portion or Westerwald rises gradually from the valley of the Layne, forming an elevated range of which the Salzberge Kopf is the highest peak: 2600 feet to the north these mountains become continuous with those of the Lower Rhine; to the west they slope to the valley of the Rhine; and both provinces border on the fertile district of Wetterau on the east.

Geologically these provinces consist chiefly of the transition strata, commencing with the grauwacke and argillaceous schistus, which in Westerwald are interspersed with basalt and other rocks of igneous origin. In Taunus the argillaceous schistus gives place to clay and sand in the valley of the Mayne. In the upper course of the Layne, spilite and greenstone occur.

The valleys are freely irrigated by streams. The climate is tempestuous in the mountains, mild and agreeable in the valleys.

Of the total number of conscripts levied in those provinces between the years 1831 and 1840 inclusive, 50,913 in number, 514 were found to labour under bronchocele, or 1 in 99 nearly, and thus out of the total population of the duchy, amounting to 393,710, Dr. Falck estimates that 4026 are goitrous. Of the conscripts 25,736 are drawn from the southern province, and of these 271 were affected with bronchocele; and 25,177, of whom 243 were goitrous, were levied in the northern province: the proportion affected being thus somewhat greater in the latter district. The disease appears to prevail to very varied extent, not only in the several districts of each province, but also in the villages included in each district: thus in the bailiwicks of Braubach, Weilburg, and Runkel, the proportion which the goitrous bore to the whole of the conscripts levied was respectively 1 in 37, 1 in 54, and 1 in 60; while in Rennerod and Hachenburg it amounted to only 1 in 378 and 1 in 516, and in Marienberg and Reichelsheim no rejections on the ground of the persons labouring under bronchocele, were returned.

\* This accent-mark of extent is alone used in the original: does it indicate feet?

Our space will not permit our presenting more than an outline of the general results obtained by Dr. Falck relative to the character of the strata and site of the 59 villages, in which he is led to infer that bronchocele exists either as a frequent or endemic disease.

*Character of strata :*

Situated in Grauwacke and clay slate	34
„ Argillaceous schistus	8
„ Spillite	7
„ Limestone—Transition?	4
„ Greenstone	4
„ Magnesian Limestone	1
„ Basalt	1
„ Clay and sand	1

*Site.* The sites of 52 of the villages are given as follows :

Situated on the summits of hills	6
„ Northern slope	5
„ Eastern „	14
„ Southern „	9
„ Western „	10
„ a slope having a North-west aspect	3
„ „ North-east „	1
„ „ South-east „	2
„ „ South-west „	2

The direction of the valleys are :

From North to South	15
South to North	5
East to West	5
West to East	6
North-east to South-west	4
North-west to South-west	3
South-east to North-west	2

Two of the villages are situated in valleys nearly surrounded by mountains, and so are built on elevated sites. Lastly, the prevalence of bronchocele does not correspond with the extent either of the forests, meadows, or stagnant waters.

II. *The endemic bronchocele of the electorate of Hesse.* The electorate of Hesse consists of four provinces: 1, Lower Hesse, to the north, containing Cassel, the capital, together with the districts bordering on the Weser, and its tributaries the Werra, Fulda, and Diemel, and the separate county of Schaumburg; 2, Upper Hesse, to the north-east, bordering on Nassau, and containing the circles of Marburg, Kirchhain, Frankenberg, and Ziegenhain; 3, Buchonia, to the south, containing the circles of Fulda, Hünfeld, Hersfeld, and the separate lordship of Smalkalden; 4, Hanau, to the south-east, containing Hanau, Gelnhausen, and Schlüchtern. Of these provinces, the Lower (with the exception of the county of Schaumburg), a portion of the Upper, and Buchonia consist of a series of valleys and ranges of hills, which in some places attain a considerable elevation, as the Habichtswald (1312'), between the rivers Elder and Diemel; the Rheinhard, between the latter river and the Werra; the Sillingawald, and the Meisner (2200'), between the Werra and Fulda; and the Knüll (1156'), between the Fulda and Schwalm. The lordship of Smalkalden is situated within the range of the Thuringewald, and contains the Inselberg (2855'),

one of its loftiest peaks. The province of Buchonia forms a plain elevated 800', and situated between the ranges of the Rhoenwald and the Vogelsberg; and Hanau is situated between the latter range and the Forest of Spessart.

Hesse is situated principally on the (new?) red sandstone formation, beneath which the magnesian limestone occurs in some places, as in the vicinity of Bieber and Reichelsdorf; and in others, as around Frankenberg, a cupreous schistus, and the new red conglomerate, and grauacke. The red sandstone is covered by a shell limestone, or molassi, from which flow saline springs. In the districts of the Rhoenwald and Vogelsberg, the Meisner, and around Kirchenhain and Zeigenhain, the tertiary strata are interrupted by basalt. In Smalkalden micaceous schistus, gneis, and granite occur in large tracts.

The mean temperature of this district may be stated at 8·9 centigrade, which is 1·1 less than that of Baden (48° Fahrenheit).

Nearly one third of the electorate is covered by forest: the proportion being much less than this in the Lower and Upper Provinces, and amounting to upwards of one half in Smalkalden—the trees belong chiefly to the oak genus in the former provinces, and in Smalkalden to the coniferæ.

The inhabitants are employed in agriculture, the tending of cattle, and in the forests; they chiefly subsist on potatoes, and in some parts, as around the Schwalm and in Hanau, on fruits. Sobriety does not appear to be one of their virtues, much corn spirit being drunk in the Lower Provinces, in Buchonia ale, and in Hanau cider and wine. They possess robust but not elegant forms. They suffer much from hemorrhoids, and in some of the valleys from scrofulous affections and intermittent fevers, more especially in the confined valley of the Ohm (Amanal), and in those of the Mayne and Weser, where basalt occurs. In Cassel, Hofgeismar, and Witzenhansen, varicocele is common amongst the conscripts; in Wolfhagen, Fritzlar and Marburg, valgus; and in Smalkalden, Eschewege and Rotenburg, bronchocele. From the returns of the conscripts levied in the electorate between the years 1837 and 1842 inclusive, it appears that of the total number of 49,916, 1071, or 1 in 47, were found to labour under bronchocele, the proportions in the several provinces being as follows:

Lower Hesse,	conscripts levied . 19,823	goitrous . 402—1 in 49
Upper Hesse	„ 9149	„ 927—1 in 94
Buchonia	„ 10,981	„ 405—1 in 27
Hanau	„ 10,010	„ 167—1 in 60

Of the total population, amounting to 712,318, Dr. Falck estimates that 15,195 labour under bronchocele. The disease seems to be more generally prevalent in Hesse than in Nassau, in each district a larger or smaller number of rejections having taken place, and, in those most affected, the proportion of the population labouring under the disease being greater. In Smalkalden, Eschewege, Rotenburg, and Witzenhansen the proportion of the conscripts found to be goitrous was as high as 1 in 11, 1 in 24, 1 in 27, and 1 in 28. In Schaumburg and Kirchenhain, on the contrary, it amounts to only 1 in 305 and 1 in 383.

Of the whole of the towns and villages the disease appears to be of frequent occurrence or endemic in 93. The geological situations of these villages are as follows:



On Magnesian and shell limestone	84
Primitive rocks	3
Clay and sand	3
Molasse	2
Volcanic rocks	1

Dr. Falck remarks, that both in Nassau and Hesse the disease does not occur frequently in places situated on strata of volcanic origin. In Hofgeismar and Wolfhagen, also, it is rarely met with; throughout these districts the shell limestone abounds. In Smalkalden where the disease is most frequent, besides the situation of the villages on the magnesian limestone, some influence may perhaps be exerted by the extensive pine forests. Though the disease, as will be seen by the numbers given, is less frequent in the upper than in either of the other provinces of Hesse, it is, on the contrary, very prevalent in certain portions of that district, this is particularly the case in the village of Ockershausen in the circle of Marburg, and to the disease as it here prevails, Dr. Falck has devoted especial attention. This village is situated in the valley of the Layne, at a point where the hill, on the south-eastern slope of which it is situated, divides into branches following a south-westerly and easterly direction. The western hill is covered by forest; the northern by gardens belonging to the town of Marburg; and by these mountains the village, which lies partly on the slope, and partly in the valley, is protected from south and west winds. The south-west branch of the hill consists of the red sandstone beneath which is placed the "rothes Todtliedendes," with grauacke and zechstein;—all the springs proceed from the red sandstone. The other branch of the hill consists of red sandstone broken in places by basalt. This valley, which forms the termination of that of the Layne, is divided into nearly equal portions by that river; and is chiefly devoted to the cultivation of corn, and to gardens. The river seldom overflows its banks; there are no marshes, and but little dry alluvial soil. The air of the valley is freely moved by winds, more especially those from the west, and the sun's rays are felt during the whole day in Ockershausen and Marburg.

The inhabitants of Ockershausen are subject to scrofulous affections as well as bronchocele. Intermittent fevers rarely if ever occur. The young persons are of the lymphatic temperament, and have yellow hair and blue or gray eyes; of 130 pupils in the village school, one only was found to have dark eyes. They are less intelligent than the children from the neighbouring villages. The adults are of large and robust forms; they labour idly, want useful vigour, and have a reputation for dishonesty in the neighbouring town. They generally attain an advanced age.

Bronchocele is most extensively diffused in this village. The infants have the thyroid gland larger than natural, and have the appearance described by Foderé as characteristic of the young persons in goitrous districts. Of the 130 children in the school, between the 6th and 14th year, 33 had bronchocele. The disease exists in all parts of the village, whether situated on elevated ground or in the valley. In 27 houses in one street, 38 goitrous persons were found; and of the whole of the inhabitants, amounting to 706, 180 were suffering from the disease. In size, the thyroid gland generally equalled that of a hen's or goose's egg, occasionally it was as large as the fist.

The disease appears usually to commence between the 10th and 20th

years; of 80 children between 8 and 13 years of age, 24 had goitre; while of the remaining 50 between 6 and 7 years of age, 9 only were affected. In the Clinical Institution of Marburg, of 19 young persons treated from this village, the majority were between 16 and 18 years of age. Dr. Falck has thrice observed the disease congenital. As before remarked, in this village there does not appear to be any material difference between the liability to the disease in the two sexes; of the pupils in the school, 69 were boys and 61 girls, and of the former 17, and of the latter 16 were goitrous. Of the 80 children between 8 and 14 years of age, 41 were boys, and 39 girls, and of these, 13 and 11 respectively laboured under the disease; and of the remaining 50 children between 6 and 7 years of age, 28 were boys, and 22 girls, and 4 boys and 5 girls were goitrous. In males in more advanced life, the disease does not appear to make progress, but in females, (from the neck being exposed) it continues to increase. Dr. Falck's observations confirm the assertion of Alibert, that the right lobe of the thyroid gland is that first affected; of the 33 goitrous children, 28 were found to have the right lobe enlarged, and in 5 the right and middle lobes were conjointly affected.

Dr. Falck remarks that no doubt can exist of bronchocele being endemic in Ockershausen. It affects those who in early life removed from the adjacent villages, and if those in advanced age are less susceptible to the operation of its causes, the disease certainly attacks their children. No decided evidence was afforded that the cattle in the district are liable to the disease.

The influence of hereditary predisposition in conducing to the development of goitre, though traceable, and chiefly on the maternal side, is less distinctly marked than is generally stated by authors. Dr. Falck is acquainted with families in which the mother, or both parents, have had bronchocele, yet where the children are wholly or partially free from the affection; and, on the other hand, he has known all the children of a family affected, where the parents were free. In several cases the affection of the thyroid gland coexisted with cretinism. In three girls he found imperfect development of the eye or its adjuncts, (1 microphthalmum, 2 ancyloblepharon;) and of these the mothers were goitrous. In another family in which bronchocele had existed for several generations, the father and all the children had a peculiar conformation of the nose, and marked mental hebetude. In two other families the mothers only were goitrous, but all the children were cretins.

The people live in huts made of wood, which, though inferior, are similar to those of the neighbouring peasantry; and there is no difference in the quality of food employed by the inhabitants of Ockershausen, from that of the population around, who, are wholly or partially, exempt from the disease.

The village is supplied with water by four wells; of these, two are situated near together, and the water proceeds from the red sandstone formation; a third from giving but little water is not generally employed, and the fourth, which is also situated in the red sandstone, yields only a scanty supply. The water from these wells is clear and limpid, and remains so during continued rain. It has the taste of distilled water. The temperature at the springs is 8.5 of Reaumur (51° Fahr.), that of the air

being 5·5 Reaumur (44° Fahr.); and this does not vary with the season. Its specific gravity is 1·001; on analysis it indicated only traces of lime, magnesia, and sulphuric, muriatic, and carbonic acids. Free carbonic acid was entirely absent; 3742·41 grammes yielded on evaporation a scanty ponderable residue.

The inhabitants of the villages adjacent to Ockershausen, and situated some on strata of *grauwacke* and clay slate, others on the red sandstone, are very little affected by or entirely free from the disease; and this is also the case with the inhabitants of the village of Kappel, situated in the valley immediately below Ockershausen. Unfortunately the water employed as beverage in these villages was not analysed.

The conclusions at which Dr. Falck arrives from his observations in the two principalities are:

1. That though different authors have found bronchocele to be accurately confined in certain districts to particular strata of rocks, as in Kumaon, according to Maclelland, to transition limestone; in Wurtemberg, according to Riedle, to shell limestone; in England and Siberia, to magnesian limestone; in Hesse, to shell and magnesian limestone; in Switzerland to transition limestone and *nagelfluh*; yet that in several districts situated on similar formations, as in Wolfhagen and Hofgeismar, bronchocele rarely occurs.

2. The assertion of Maclelland that bronchocele is infrequent in districts where the primitive strata prevail, is opposed by the observations of Dr. Falck in Hesse. He has further been informed that bronchocele is frequent in the districts of Schierke, Lehrbach, and Neuwerk in the Hercynian forest, which are situated on primitive and transition rocks; and similar observations are recorded by Humboldt, De Vest, and Iphofen.

As, therefore, the disease cannot be regarded as prevailing only in situations where particular forms of rock abound—to what, asks Dr. Falck, can we ascribe its production? Can the absence of free carbonic acid gas from the water employed as beverage by the inhabitants of goitrous districts, afford a sufficient explanation of its development? That the origin of the disease is to be sought for in some noxious quality communicated to the water, either by the presence of some injurious ingredient, or the absence of a necessary element, is probable enough; how far, however, the absence of free carbonic acid gas may exert such influence can only be settled by observations collected in the several districts where the disease prevails. The observations of Dr. Falck, as to the quality of the water employed in the village of Ockershausen, and the previous notice of a similar kind by Iphofen,\* are highly important; yet it is much to be regretted, that the former had not directed his attention to the chemical constituents of the water employed in the villages adjacent to Ockershausen, in which he informs us that bronchocele is little prevalent. We would add also, that his demonstration of the inapplicability of the conclusions of Maclelland as to the strata to which bronchocele is confined, would have been more satisfactory had he, in all the districts, informed us from what source the water employed as beverage by the inhabitants was derived; without this

\* Der Cretinismus, Philos. und Medic. Unternucht. Dresden, 1817. 1 Th. § 77.

information we are left in doubt whether in any given district the inhabitants use the spring water of their own soil, or are supplied by rivers proceeding from strata of a totally different character.

Notwithstanding this defect, we regard the thesis of Dr. Falck as highly commendable. Our knowledge of the efficient cause or causes of bronchocele is extremely imperfect; nor can the history of any other subject in the wide field of experimental science, afford a more curious illustration of the varied and conflicting theories which may be deduced from the careless or too limited observation of facts; were, however, medical men in the different districts where the disease prevails, to devote themselves to record accurately the local peculiarities of climate, soil, the chemical qualities of the water, and all other circumstances which could exert any influence on its development,—a mass of facts would shortly be accumulated, which would afford the basis of satisfactory generalization. Observations of this kind have now been collected in several different districts where the disease is prevalent or endemic, and Dr. Falck has done much to supply this want in the countries, the illustration of which he has undertaken.

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#### ART. XVII.

*Lectures on subjects connected with Clinical Medicine, comprising Diseases of the Heart.* By P. M. LATHAM, M.D. &c. Vol. I.—London, 1845. 12mo, pp. 374.

DR. LATHAM, some years since, finding his health impaired by the toils of hospital practice, and feeling laudably unwilling to render his duties as physician easy by indifference to their higher attributes, “relinquished his office at St. Bartholomew’s, and with it, some of the best hopes he had of being useful in his generation.” The first result of the sacrifice was a return of health,—the next the production of the volume now issued to the world. The author may rest assured that few persons will regard these effects without deep gratification: the gradual restoration to vigour of a distinguished member of the society in which he moves, cannot fail to prove matter for rejoicing among his peers; nor can the appearance of a book pointedly designed and admirably suited to popularise the study of diseases of the heart be regarded otherwise than as a professional event of no slight consequence.

Dr. Latham avows his purpose to be a limited one: it is “to regard the diseases of the heart only in one point of view, i. e. as they appear in the living man. But this one point of view includes the several objects of their clinical diagnosis, and their clinical history, and their medical treatment.” And in respect of clinical diagnosis, the writer’s faith concerning the means of its accomplishment stands broadly and decisively announced in the words: “enough is already known to make the diagnosis of diseases of the heart hardly anything else than a just appreciation of their auscultatory signs.”

One of the characters of this book is the incompleteness of its descriptions;—in no single point or bearing is the subject touched upon fully worked out and evolved. The incompleteness is systematic and designed;

the motives of its adoption we append in the writer's own words. Explanation is indeed here not only interesting and requisite in respect of the book itself, but assumes importance from the fact that the person, who defends and pursues the system in question, once held a prominent place among the clinical teachers of the metropolis.

"But as I lectured, so now I write, for one class of students especially. As my hearers were, so now I presume my readers will be, chiefly those who are seeking information at the bedside. To such there is no greater impediment of knowledge than over-teaching. The teaching which they most require is suggestive. They have the realities themselves to learn from, the original *book* to read, upon which all sound instruction is but a commentary. Therefore the commentator should only interpose when and where he is needed, and not after the manner of certain critics, who most *help* us with their annotations where the sense of the author is clear beyond dispute." (p. ix.)

Now that there is—or rather, according to circumstances, may be—fundamental truth here, we readily admit. But in practice, we apprehend, Dr. Latham's notion would, if carried to its limit, prove subversive of all the good to be derived from the clinical direction of students of disease. In respect of the system of *clinical* teaching prevalent in this country, the idea that its amount is in excess—that youths are misled by being over-led—seems to us not a little paradoxical. That in the Paris hospitals, danger sometimes arises—danger that the mind of the beginner may be confused through the abundance of minute detail, poured forth in almost inexhaustible bounty by enthusiastic and eager aspirants to the renown of first-rate clinical exponents of disease, is—it may without difficulty be conceded to Dr. Latham—an unquestionable fact. But if we turn to the London schools, and mark the style and manner of clinical guidance flourishing *there*,—if we hearken to the occasional lecture, consisting, too often, of a hasty admixture of crudities and common-places, hurried over with an anxiety worthy of a better motive than the always presumable, and too often obvious, one,—if we inquire into the contentment of those taught upon this plan, and find that even they—even those typifications of listless indifference, the "walkers of hospitals"—are dissatisfied, grumble at being *under-taught*, and apply to the editors of weekly prints to urge the claims they have themselves in vain striven to impress upon their so-called teachers,—if all this be done, we affirm the grounds of Dr. Latham's philosophy will, in their practical aspect at the least, appear singularly unstable. So far from agreeing in this matter with this eminent physician, we ourselves have, after no little reflection and observation, persuaded ourselves to regard the very incompleteness, (or, as it is fashionably termed at the present day, *suggestiveness*,) which Dr. Latham would foster, as the origin of our inferiority (where we are inferior) to continental observers. And, on the other hand, our conviction has been deliberately arrived at and is firmly established, that were a system of thorough clinical instruction brought to pervade the schools of this empire, a class of physicians would arise, with the combined scientific and practical attainments of whom foreign nations must hopelessly endeavour—if they did endeavour—to compete. By thorough clinical instruction we mean the conveying of a detailed, systematic, complete history of the particular cases of disease under observation,

all the particulars of which history may be and should be (with a few necessary exceptions) ascertained by the student himself.\*

But there is another of Dr. Latham's general doctrines of the means whereby practical medicine is to be surely and solidly advanced, that is not only eminently true, but so vitally important, especially at the present period, that we conceive it a duty to aid in its promulgation. We allude to the opinion he holds concerning the degree to which "physiology" should be suffered to constitute the basis of "practical medicine;"—and the opinion is thus pithily and emphatically conveyed :

"It is not *all* physiology which can be made useful towards the knowledge and treatment of diseases, but only those parts of physiology which are undeniably true, and not only true, but *easily and at once seen to be so*. A great deal of what is termed physiology *has turned out to be a mistake*; and so far as it has got mixed up with our notions of disease (and *this has happened to a deplorable extent*;) it has *hindered the progress of practical medicine*." (p. 9.)

The italics are our own, and we use them to mark our deep conviction of the truth and importance of the words. The lamentable delusion that speculative systems of medicine, based upon the everchanging phantasies of physiology, are calculated to advance the skill of the physician in the management of disease, cannot be too energetically and systematically denounced. Books constructed on this principle are peculiarly dangerous—and dangerous in the direct ratio of their attractiveness from their prettiness, their superficial ingenuity, and their apparent acquaintance with the intimate phenomena of vital action.

We now proceed to give an account of the work before us; and as it is one of no ordinary merit, both as to matter and style, we shall have great pleasure in reviewing it, chapter by chapter, from beginning to end. A volume like the present is a lure somewhat of the rarest for a medical critic to be tempted withal.

LECTURE I. Dr. Latham's first lecture embraces the consideration of the natural sounds, impulses, and resonances of the heart, and of the manner in which variations in degree and extent of these are significant of disease.

In the generation of the first sound of the heart in health, muscular contraction, muscular tension, and extension of the auriculo-ventricular valves, are severally engaged; the second sound results from the sudden closure of the sigmoid valves: this is the theory used by Dr. Latham. He conceives the ear must become practically acquainted with these sounds in order to appreciate them justly, and therefore declines giving his pupils or readers any hint concerning their characters. Dr. Latham perfectly corroborates our own experience in respect of the extent to which the first sound is audible in health in the following words: "I am persuaded two healthy persons would not easily be found in whom it would be heard within exactly the same thoracic space." On the limitation of the second sound he attempts greater precision, but the statement that it is "audible

\* We cheerfully admit that in certain of the metropolitan schools the system of clinical teaching has undergone marked improvement within the last few years. But much remains yet to be done: not only directly, but indirectly in respect of the over-devotion of students' time to what are termed accessory branches of medical knowledge.

in the *course of the aorta* and of the pulmonary artery and of the carotids" is either meant to be vague, or is liable to erroneous construction.

LECT. II. Sounds of the heart different in kind from its natural and healthy sounds next engage Dr. Latham's attention. All varieties of valvular sound he would designate by the name *endocardial*, all sounds produced in the pericardium *exocardial*, *murmurs*. We question whether a student is likely to gain information as readily from this mode of styling the unnatural sounds proceeding from the heart, as from the more usual, but, we admit, somewhat cumbersome system. Although the word *exocardial* contrasts very harmoniously with *endocardial*, in our old-fashioned horror of new words we almost wish Dr. Latham had retained the term *pericardial* for the former. As critics we may also object to the word *murmur* as applied to the pericardial friction-sound and its varieties. As a mere question of words it may and is undoubtedly quite as fair to call a friction sound, as a morbid valvular sound, a murmur; but, in strictness, both should not be designated by the same title, and usage has assigned the one mentioned to the valvular sound.

Dr. Latham gives a sprightly sketch of the progress of the diagnosis of valvular disease, by means of endocardial murmurs, from the first rude essays of Laennec to the existing condition of very notable perfection. The facts are strikingly and instructively put, and the terse language in which they are told, gives them a force that must (presuming them to have been thus orally delivered) have produced its effects on the intelligences of those who listened. But no mention of *names* occurs from first to last. This is a mode of proceeding wherewith we have no sympathy. It is unjust to those laborious men who have toiled to extend the field of our art,—it is impolitic towards those entering on the study of that art, to withhold from the owners the meed of applause which general opinion has awarded.

The infinite rarity of direct or diastolic mitral murmur compared with the frequency of indirect or systolic murmur, connected with the same valve, has struck all observers of cardiac disease. Dr. Latham adopts the following explanation of the fact :

"It is probable that, as in health, when the mitral orifice is entirely free, the blood glides from the auricle into the ventricle without any impelling force from behind; so in disease, when the orifice is narrowed, the resistance does not produce any extraordinary effort on the part of the auricle to overcome it. And thus in disease as well as in health, through a narrow passage as well as a free one, the onward current of blood from auricle to ventricle is still without noise. That it is otherwise with the regurgitating current through the same passage, and that the murmur of the blood rushing back from ventricle to auricle should be often signally loud, must be owing to the force of the ventricle, now engaged in impelling it." (pp. 38 9.)

Having stated the current principles concerning the localization of endocardial murmurs by means of the *time* at which they are heard and the *direction of their propagation*, Dr. Latham proceeds to express his doubts that those principles will invariably lead to correct diagnosis. He is "less peremptory about the certainty of their application than he was a year or two ago." So are we. But still, like Dr. Latham, we abate not a jot of our reverence for the principles in themselves, believing their funda-

mental truth irrevocably sealed by experience;—we would believe that there are occasional counteracting causes which modify, as a necessary physical result, the direction in which these murmurs are propagated and conveyed. The establishment of the nature of these counteracting causes (rarely influential, as they are, in actual practice) is the existing desideratum. The writer attempts to supply it,—but the attempt is chiefly valuable, as likely to lead others to pursue the subject. Four causes are suggested: the presence of solid substances, exterior to the heart, within the chest, as morbid growths, aneurismal tumours, and condensed portions of the lung; the enlarged capacity of the heart-itself; the mere loudness of the endocardial murmur; a peculiar *quality* of the endocardial murmur, giving it a high *musical note*. Quality of sound has, we would observe, nothing to do with its musical note.

Dr. Latham protests against the “popular notion” that endocardial murmurs increase in loudness directly as the amount of disease and consequent impediment. He is right. And he illustrates the objection by reference to two cases terminating fatally at the same period, in one of which there was no endocardial murmur at all, in the other a loud bellows-murmur extensively audible. In the former case, the auriculo-ventricular orifice was so narrowed as only just to admit the little finger, and the aortic orifice was only just not closed; in the latter there remained a tolerably free space for the passage of blood through both orifices. “The truth is,” says Dr. Latham, “that the murmur becomes louder as the disease and the impediment increase only *up to a certain point*, and then that it becomes less and less loud as they go on to increase beyond this point.”

“There is, or rather, perhaps, there was, a notion that endocardial murmurs have wonderful diagnostic secrets wrapped up in their varieties of *kind* and *quality*.” Whether such notion be past or present, Dr. Latham is perfectly right in maintaining its fallacy. The affectation of assigning the amount and characters of obstruction through the whistling, filing, cooing, &c. varieties of murmur, is among the erroneous puerilities of the auscultatory art.

LECT. III. Dr. Latham proceeds to illustrate the fact that the origin of endocardial murmurs in valvular disease, may be otherwise caused than by valvular impediment, and that their mode of production is in yet other cases doubtful.

There are instances in which endocardial murmur comes and goes; it is not constantly present. It disappears under rest, it appears under exertion. We have known this not *very* uncommonly to be the fact. It is probable in these cases, according to Dr. Latham, that there is a real obstacle “not enough to cause the requisite degree of vibration when the current of the blood is slow and undisturbed, but quite enough when it is more rapid and forcible.” This is one explanation,—the phenomena of *anæmia* have to our minds occasionally suggested another.

An endocardial murmur may arise, Dr. Latham finds, a few days before death independently of cardiac disease,—a fact he is unable to explain.

A loud endocardial murmur may occur in connexion with the hysterical paroxysm,—and mere force of contraction of the organ will produce the same sound in children. We know the facts by experience; we are unable to explain them satisfactorily any more than Dr. Latham.



When the chest is deformed, "there is an end of our pretending how to calculate what its condition may be, by listening and feeling and percussing. Its sounds and impulses and resonances, be they what they may, are now worth nothing at all as guides to diagnosis. The heart is dragged from its proper seat, and imprisoned in some strange place, and perhaps turned almost topsy-turvy by the encroachment of the vertebral column and the approximation of the ribs." In some cases an endocardial murmur may be simulated, if pressure be made, in ausculting, with the end of the stethoscope.

A blowing murmur has been described by some previous writers as seated in the subclavian artery, and attendant in a certain proportion of cases on pulmonary consumption. To this Dr. Latham makes no allusion; but he dwells upon a certain murmur (coincident with the systole of the heart) audible frequently in the same disease in the space comprised between the upper border of the second and lower border of the third costal cartilage an inch to the left of the sternum, as having some diagnostic value. "Supposing the pulmonary artery in its first division to be the seat of the murmur, does it become such in consequence of its own disease, or by reason of pressure or impediment reaching it from diseased lung?"

There is nothing deserving notice in the author's remarks concerning the "possible fallacy" (and we may add the not unfrequently committed error) of mistaking the respiratory murmur for an endocardial murmur. Nor is there anything novel in his comment on anæmic vascular murmurs.

LECT. IV. Here we find Dr. Latham discoursing of the general estimate to be taken of the uses of auscultation applied to the heart. In his wonted lively and dramatic style he traces the advance of knowledge in the diagnosis of chronic cardiac disease, and describes the efforts made to attain the practical benefit of detecting the acute forms of disease in the organ,—those forms that are remediable and curable.

"And at length the mark has been hit, and the prize has been won. For now there is no truth experimentally more certain than this, that auscultatory signs above all others, and oftentimes before all others, and oftentimes in the place of all others, may be safely trusted to declare the beginning and the augment, the decline and the cessation of acute inflammation in those structures of the heart, which are especially, if not solely, obnoxious to it; and that the same signs may be confidently appealed to as guides, by which to choose the remedy, and apportion its quantity and regulate its force, and continue or discontinue its application." (p. 87.)

LECT. V. Dr. Latham in former days believed that the bellows-murmur of cardiac disease accompanying acute rheumatism was seated in the pericardium; subsequently he "began to suspect that it proceeded from the internal lining." But he could not verify his conjecture, for *no patient of his* ever died of that "disease of the heart, which, coming on during acute rheumatism, is characterized by the bellows-murmur." But "what my own experience would not furnish," continues Dr. Latham, "M. Bouillaud's has supplied. Many have died during the active progress of this disease under his care, and dissection has found it to be inflammation of the endocardium. Thus we are indebted to M. Bouillaud for our first knowledge of the important fact." Admitting the inferences inevitably deducible from these statements, it would be a nice question for the casuists to de-

termine which of these two physicians had, in the instances referred to, been the most useful in their spheres.

It will be well for our junior readers to ponder deeply on the following most wise and emphatic words :

" Seeing, then, that the endocardial murmur alone can determine the existence of endocarditis, you are required to search after it in every case of acute rheumatism. I say emphatically to *search after it*, because it is one of those signs which must always be sought before it can be found. It does not intrude itself upon our notice like palpitation, or an irregular pulse. The patient does not draw our attention to it as he does to pain. The physician must make it out entirely for himself. And indeed it is infinitely important that he should have the earliest possible notice of it with a view to the earliest possible application of the remedy. Never omit, therefore, to listen to the præcordial region whenever you visit a case of acute rheumatism, and to visit a case of acute rheumatism oftener perhaps than you otherwise would do merely for the sake of so listening. All may seem to be going on well. The general symptoms may be far from severe. The chest may be free from pain. The heart's action may not awaken suspicion by its force or irregularity. Nevertheless, its internal lining may be inflamed, and, if you listen, the endocardial murmur may convey the momentous fact directly to your ear." pp. 104-5.)

LECT. VI. But not only is endocardial murmur to be sought for, but certain modifications of the natural sound are to be sought for as its inevitable prelude. Dr. Latham hardly ever knew an instance of acute rheumatism in which unnatural length or roughness of sound detected one day, has not become an unequivocal cardiac murmur in twenty-four hours. When he hears such modifications of sound, he consequently begins the treatment of endocarditis at once.

Although endocardial murmur sometimes constitutes the sole evidence of the existence of endocarditis, and though functional disturbance of the organ may be completely absent, this is not the common case. Symptoms are superadded, and these are,—pain and anguish of various degrees and kinds, excessive impulse, and intermittent fluttering action of the heart. These symptoms give us a much surer insight by their amount and intensity into the peril attached to the disease, than does the murmur this evolves. Pain in the præcordial region may arise in the course of acute rheumatism without being followed by the auscultatory signs of either endocarditis or pericarditis,—but prudence would lead us to commence the treatment, as if one or other were destined to ensue. We envy the earnestness of conviction which can justify Dr. Latham in using the following language in his comment on the importance of treating such præcordial pain, as if significant of already evolved endocarditis : " For thus, if we have begun the treatment *only a single day sooner* than we otherwise should have done, we may have *perfectly cured* the disease, which but for the gain of this single day, would never have been more than half cured." After such an emphatic declaration, the author but weakens his point in adding, " the gain of a single day in the treatment of endocarditis is a gain indeed." The man who believes this, and does not treat his rheumatismal patients at the first onset, must eventually feel bitterly the force of the "*diem perdidit*" of the Roman.

The consideration of the diversities of relation which the endocardial murmur is found to bear to other symptoms leads Dr. Latham to establish : 1st, that in some cases of endocarditis the murmur is coincident with the very commencement of the inflammation ; 2dly, that in some, and those

the most frequent, cases it does not arise till the inflammation is somewhat advanced; 3dly, that in some, and those the least frequent, cases it does not arise until the inflammation is on the decline, or has actually ceased; and upon this distinction are founded considerations of interest for which the original should be consulted, but of which we shall give a specimen:

"The endocardial murmur arising under these circumstances was unchanged by medical treatment. It remained as long as the patients continued under observation. The inference from such an event is clearly this, that an inflammation of the endocardium had accompanied the rheumatic fever; that this inflammation was of small activity, and insufficient during its progress to interfere with the natural sensations and movements and sounds of the heart, but enough in the end to produce by its effects some permanent inequality on the surface of a valve, and a permanent murmur as the sign of it." (119-20.)

LECT. VII. We are here brought to the history of pericarditis. Dr. Latham teaches that the similitude of exocardial murmur to the sound produced by rubbing the hands or coat-cuffs together, the sensible nearness of the murmur to the ear applied to the precordial region, its conveyance to a distance over the chest, and its non-conveyance in the course of the aorta and carotids, are sufficient to stamp it as originating in the pericardium. But further, the crumpling, creaking, churning, &c. varieties, less perfect in their character, become changed in the course of one or two days (if arising from pericarditis), completely or partially, into the genuine exocardial murmur. These more indefinite sounds will sometimes come and go for two or three days, and then cease altogether, or then become permanent; such sounds are of pericardial origin.

Dr. Latham illustrates his opinion "that serous effusion within the pleura *always* obliterates the attrition-sound, and that serous effusion within the pericardium *generally* leaves it unaltered," in his usual pointed style. But he must be aware that Dr. Stokes affirms that extensive pleural dullness and friction sound may coexist. If the words *always* and *generally* were transmuted into the phrases *with the rarest exceptions*, on the one hand, and *not unfrequently*, in the other, Dr. Latham's opinion would be more accurately in accordance with fact. The reason, why this should be so, is sufficiently obvious.

Visible undulation and tactile vibration between the cartilages of the left second and third or third and fourth ribs, or between both at the same time, (never occurring in any other situation,) are dwelt upon next. It is to be noticed that Dr. Latham makes no reference to vaulted form of the precordial region, nor to the increased distance at which the heart's sounds appear to be produced from the ear, as among the signs of pericarditis. Yet an observing and diligent investigator of cardiac disease has affirmed of late that such vaulted form is sometimes the very first *physical* peculiarity (including the auscultatory) induced by the disease.

There is no one symptom of inflammation to which ordinary practitioners trust so implicitly, in evidence of the existence and amount of that state, as pain. A more utter error cannot exist; the writings of Louis especially abound with proofs of the error and safeguards against its commission. Dr. Latham thus comments upon the fact in respect of pericarditis:

"But of all symptoms mere pain is the most inconstant and uncertain, whatever be the disease. It is so in pericarditis. It is present in one case, and absent in another strangely and unaccountably. I have known much pain, when the disease

has been of little severity, of short duration, and of easy cure; and I have known the severest pericarditis pass through all its stages without pain. All other symptoms have been present to mark its reality and its progress; the murmur and the præcordial dulness, and the fluttering heart, and the respiratory anguish. And sometimes the patient has died, and sometimes he has escaped by a tardy and precarious convalescence. But from first to last there has absolutely been no pain." (pp. 141-2.)

LECT. VIII. Between the years 1836 and 1840, both inclusive, there occurred under Dr. Latham's care at St. Bartholomew's Hospital 136 cases of acute rheumatism. These cases, considered in respect of cardiac affection, are thus arranged by the writer:

"Cases of acute rheumatism	-	-	136
Heart, exempt in	-	-	46
affected in	-	-	90
Seat of diseases in the heart:			
Endocardium alone in	-	-	63
Pericardium alone in	-	-	7
Endocardium and pericardium in	-	-	11
Doubtful in	-	-	9

—Deaths 3. In all of whom both endocardium and pericardium were affected." (p. 144.)

From this experience it follows that about two thirds of sufferers from acute rheumatism are attacked with cardiac inflammation. We believe that the proportion is above the usual standard,—a circumstance probably to be explained by the "sedulity of Dr. Latham's clinical clerks who were ever on the alert to gain admission into his wards of (what were esteemed) interesting cases." It further follows from this experience that endocarditis is nine times as frequent in rheumatism as pericarditis; and that pericarditis is more frequently found in combination with endocarditis than alone. This portion of the results does not very materially differ from that of close observers in general.

Of sixty-three individuals with inflamed endocardium not one perished; the disease, even in individuals commonly of deteriorated constitution, (for of such is the population of the London hospitals composed,) is consequently not one involving much peril to life. But the results of another kind are to be considered; restoration of the endocardium to its healthy state was rare. This is seen from the facts, that the membrane remained permanently injured in forty-six cases, and recovered its complete integrity of structure in seventeen only: in other words, endocardial murmur totally disappeared from seventeen hearts only.

In all the seven cases of simple pericarditis recovery took place, and all murmur disappeared. But Dr. Latham is of course unwilling to affirm that all anatomical traces of the disease had, as in instances of cessation of endocardial murmur, disappeared. It is probable that in all, or in very nearly all, such cases some amount of adhesion permanently remains, and that the functional ease and perfection of the heart suffer proportionally.

Of the eleven cases of endo-pericarditis three terminated fatally; in none of the eight instances of recovery does the author believe complete restoration of the structures to the healthy state ensued.

Does ground exist for believing that in cases of these combined inflam-

mations, either naturally tends to produce the other? It appears that in four of the eleven cases the endocardial came on before the exocardial murmur, and in four the latter before the former; while in one they arose simultaneously; and in two they coexisted when the cases were first examined.

LECT. IX. The consideration of inflammation of the lungs accompanying acute rheumatism, either alone, or in combination with endocarditis, or with pericarditis, or with both, furnishes Dr. Latham the opportunity of exhibiting greater originality than in his previous lectures.

Inflammation of the lungs (as Dr. Latham uses the words,) occurred in 24 of 136 cases of rheumatism; in 1 of 5½ cases consequently. The cases were made up of 4 of bronchitis, 18 of pneumonia, and 2 of pleurisy. The probability of inflammation of the lungs arising out of acute rheumatism is small; and the probability of such an event is not at all augmented by alliance of the articular affection with endocarditis. But inflammation of the lungs coexists sufficiently frequently with pericarditis, and with endo-pericarditis, to establish a sort of natural connexion between them. The following table exhibits more strikingly and concisely, than is otherwise possible, these very interesting facts.

“Of rheumatism without affection of the heart there were—Cases 46. Lungs affected 5:—Single pneumonia (fatal); Single pneumonia; Single pneumonia; Diffused bronchitis ending in double pneumonia; Diffused bronchitis of both lungs.

“Of rheumatism with endocarditis there were—Cases 63. Lungs affected in 7:—Double pneumonia; Double pneumonia; Double pneumonia; Diffused bronchitis passing into double pneumonia; Single pneumonia; Diffused bronchitis of both lungs; Bronchitis passing into inflammation of the larynx and trachæa.

“Of rheumatism with pericarditis there were—Cases 7. Lungs affected in 4:—Double pneumonia; Diffused bronchitis passing into double pneumonia; Single pneumonia; Single pneumonia.

“Of rheumatism with endocarditis and pericarditis combined there were—Cases 11. Lungs affected in 8:—Double pleurisy with double hydrothorax; Single pleurisy with hydrothorax; Double pneumonia; Double pneumonia with double pleurisy and double hydrothorax (fatal); Single pneumonia; Single pneumonia; Pneumonia and diffused bronchitis of one lung (fatal); Diffused bronchitis of both lungs (fatal.)” (pp. 164-5.)

Two interesting cases (one fatal, the other not so,) are next recorded; the details are tolerably close; and the narratives exhibit very remarkably Dr. Latham's confidence in the powers of “the great remedy,” mercury.

LECT. X. Dr. Latham introduces his account of the treatment of acute rheumatism, (preparatory itself to that of the cardiac inflammations,) by a comment on the fact that venesection, opium, calomel, colchicum and drastic purgatives, have severally worked their cures of the disease,—understanding these remedies to be employed in each instance as the “sheet-anchor” (in the current cant phrase) of the individual prescribing them. Dr. Latham bears his testimony to the truth that under the use of each he has “seen patients *get well*.” Has Dr. Latham ever seen patients afflicted with severe acute rheumatism, sent forth from hospital in a state of (to their feelings) complete restoration,—which patients had nevertheless undergone no treatment but that signified by abstinence, the free use of

dilenta, and the occasional administration of a gentle laxative? Probably he has not. *We* have. And we confess that such sights have shaken our faith,—have shaken it especially when taken in conjunction with the circumstances alluded to by Dr. Latham himself—as to the real part which active medication plays in saving life. Dr. Latham, however, maintains the robustness of his faith unweakened, and in sharp, antithetic diction and earnest and cordial tone, argues the claims of art versus those of nature. We sincerely hope, for their own sakes, that each reader of his pages may share his convictions,—their inward sense of power and satisfaction at the bed-side of rheumatic patients will be infinitely enhanced by such participation. We the more sincerely hope this,—because we have in our own persons often felt the want of this inspiring faith. Often have we sighed to possess that genius for belief, and that faculty (for it is such) to conceive art all-powerful, that makes the practice of medicine for some men a perpetual triumph.

Yet, even on Dr. Latham's own showing, the treatment of rheumatism on the active, interfering, and nature-guiding principle, is not to be carelessly ventured upon. It is in fact *gros jeu*, this treatment. For we are told "it is often only when the powers of medicine are pressed *even to the verge of destroying life*, that *life is saved*." If the treatment of rheumatism ever come to this, adds the author, it is right to know what we are about when we undertake to treat it; a truth in which we most heartily coincide.

"Disease is a series of new and extraordinary actions. Each link in the series is essential to the integrity of the whole. Let one link be fairly broken, and this integrity is spoiled, and there is an end of the disease; and then the constitution is left to resume its old and accustomed actions, which are the actions of health." Such is Dr. Latham's version of an old explanation—so-called at least—of the fact that recovery ensues from certain diseases under systems of treatment the most unallied, nay the most opposite in nature. We *could* suggest another and an obvious one,—but we abstain.\*

Here is a striking passage, concerning the influence of large bleeding in rheumatism:

"I have seen people enormously bled in acute rheumatism, and their entire disease swept away at once, and health restored rapidly. And the practice which will do this, is it not a splendid and a tempting practice?"

"Again, I have seen people enormously bled in acute rheumatism, and their disease swept away at once; but they have forthwith gone raving mad. And a practice which will do this, is it not a hazardous practice?"

"And again, I have seen people enormously bled in acute rheumatism, and no single pain has been mitigated; but the disease has continued for an unusually long time in its acute, and then has degenerated into its chronic form. And a practice that has this issue, is it not a doubtful practice?" (p. 193.)

Dr. Latham teaches ingeniously that the evils to be arrested in ordinary inflammation by profuse bleeding, namely, the eventual textural changes

\* "Why does bark cure ague, sir?" "Because it interrupts the concatenation of morbid phenomena." Such was the habitual and well-known query (and such the required response) of an Edinburgh examiner for degrees, some years since renowned in that school. Is Dr. Latham's sentence more than a paraphrastic statement of the Scotch elucidation?

produced by the morbid process, are not to be dreaded in rheumatism; and that the motive for pushing venesection to extremes, and until all vascular action have been quelled, does not exist in the latter affection. Employed in moderation, and "rather as preparatory and auxiliary to other remedies, than for its own exclusive power," Dr. Latham objects not to venesection. But he is especially chary of carrying bleeding to such a point as to communicate a shock to the nervous system. He addresses his audience thus: "If you do communicate that shock, you are likely to *disturb the just tenor of the disease*, and then some untoward circumstance may arise." Why was not this very disturbance of this very tenor, set down in the passage just quoted by us (p. 185.) as the means to the end sought by all treatment? We do not thoroughly comprehend this seeming contradiction.

The pith of the comments on the treatment by opium alone is contained in the following words: "I regard the indication found in the nervous system to be upon the whole a safer and better guide for the treatment of rheumatism, than that found in the vascular, and opium upon the whole to be a safer and better remedy than venesection; if we are to follow one of the two indications, and to use one of the two remedies only."

The third plan, which attempts the cure of the disease by procuring large evacuations from the liver and intestines, and consists in the administration of ten grains of calomel at night, and a black draught in the morning, repeated as long as they are well borne, is thus enlogized:

"It abates the fever, it softens the pulse, it reduces the swelling, and it lessens the pain. In short, it subdues the vascular system like a bleeding, and pacifies the nervous system like an opiate; and often in the course of a week the acute rheumatism is gone. In three days there is often a signal mitigation of all the symptoms; and in a week I have often seen patients, who have been carried helpless into the hospital, and shrieking at the least jar, or touch, or movement of their limbs, risen from their beds, and walking about the ward quite free from pain." (p. 204.)

But this sort of medication sometimes cannot be borne at all; and if salivation (the chance of which is *always* incurred) arise, the treatment must be changed altogether. In this contingency, therefore, "time is lost, the case is perplexed," [or rather the doctor?] "the disease is *prolonged*, and the patient perhaps *injured*." Still, concludes Dr. Latham, in calomel and purgatives we have a better mode of treatment than in venesection or in opium. It has appeared to him not only to bring the disease to a conclusion in a shorter time, but to prepare the way for a more rapid convalescence than the other methods.

But, says Dr. Latham, there is a plan of treating acute rheumatism, which is juster and safer, and applicable to more cases and more successful than any one of the three referred to. And that plan is *a compound of all three*.

LECT. XI. The mode in which the three plans are combined by Dr. Latham is gathered from the following passage:

"When from the pulse I have considered venesection necessary to bring down the circulation, the loss of between twelve and sixteen ounces of blood has generally been enough to answer the purpose in view; and the venesection has seldom been repeated.

"The opium, and calomel, and purgatives I have been accustomed to give in combination thus: with the calomel administered at night, according to its quantity, I have united more or less of opium. To ten grains of calomel I have added one grain of opium; or to five of calomel I have added half a grain, continuing to give them together in the same proportions, night after night, as long as they are needed. Then, on each succeeding day, when a large purgation of the bowels has been duly obtained, I have still given the opium alone, or with saline draughts, in doses of half or one third of a grain, every five or six hours. And thus, with the larger quantity at night, and the smaller quantities during the day, about two grains of opium have been commonly taken in the course of twenty-four hours." (p. 214.)

There may have arisen surprise in the minds of some of our readers that colchicum has so far received no mention from the deliverer of these lectures. The delay is by him referred to the circumstance that its curative properties are not, *like theirs*, constantly annexed to any known operation upon particular organs. The reason begs a question, and begs it in our minds in the wrong direction,—and even if the point assumed were correct and granted, the motives for delay were an insufficient and, as a matter of principle, an incorrect one. At least so we believe. And indeed we delight to find that in a subsequent page Dr. Latham admits our implied notion upon the question referred to: "As the disease," he says, "may have an *essential element* beyond its sensible actions and sufferings, so the remedies may have secret operations beyond those which are seen and palpable. And it may be in virtue of those that they cure, and not of these." (p. 227.) The wonder to us is that any human being who has seen—seen with his understanding—twenty cases of disease in his life, can doubt that that *essential element* exists. And the further wonder to us is that men of high intelligence—men of the stamp of this author—will persist in attempting to explain what in the present state of elementary knowledge is utterly inexplicable—the action of alleged remedial agents. Such explanations do very well for the class-rooms of teachers of *materia medica*; but they savour too much of essential platitude to be suffered to wander beyond those learned precincts.

Colchicum cannot, the writer thinks, be safely trusted single handed for the cure of rheumatism in the severer cases, but it can in the milder ones. In the former class of cases he reserves it for special emergencies, and then employs it with almost unlimited trust and confidence. He "invokes the aid" of colchicum, (uncombined with either alkali or opium,) when fever, pain, and swelling, though abated, have not altogether disappeared, or when pain and swelling do not subside in proportion to the diminution of vascular action. In cases of relapse he has likewise recourse to colchicum. He appears to make no distinction in respect of curative influence between the wine of the seeds and of the root.

Dr. Latham guards his auditors against the notion that all cases of acute rheumatism are as readily amenable to treatment, as his previous declarations on the matter might lead inexperienced persons to suppose. He enters into most valuable considerations on the uncertainties of the art of treatment,—considerations which are often strikingly contradictory in spirit (Dr. Latham is too good a logician to allow them to be so in letter,) to the confident announcements that precede, and that we have glanced at, as we passed. We cannot refrain from transcribing a passage that conveys the essence of several very instructive pages.



"There is no such thing as calculating the results of medical treatment with certainty. Success and failure run contrary to expectation sometimes in every disease, but most of all in acute rheumatism. Where you would look for failure, you often meet with success, and vice versa. Of rheumatism it may be said generally, that it is less within reach of the remedy in proportion as it is seen and treated at a period more distant from its commencement. Yet loss of time does not augment the difficulties of after-treatment, or diminish the probabilities of its success to the same degree in acute rheumatism as in other diseases of an inflammatory nature. I have often known acute rheumatism of the severest kind have the start of the remedy full ten days or a fortnight, during which nothing whatever has been done for its relief; and, when at length the remedy has been applied, it has been cured as easily and rapidly as I could promise myself that it would have been, had I taken it in hand ten days or a fortnight sooner." (p. 223.)

Infinitely true all this! But how comes it then that the same teacher who tells these important truths, can insist for hours on the certainty of his art, speak of "dealing (by medication,) with blood-vessels and with nerves, and with secreting organs separately," as though all these were so many dead tissues to be manipulated on a dissecting-table? Whence draws he the courage to assure youths that their "different remedies, once set a-foot and pursuing different paths, meet and end in one purpose—and that purpose the cure:

'As many arrows, loosed several ways,  
Fly to one mark.'

Ah! Dr. Latham, you deal here with matters of imagination, and naturally appeal to the poets for illustration.

Turning to the treatment of the cardiac inflammations, Dr. Latham takes occasion to object to the prevalent mode of speaking of endocarditis and pericarditis as "*incidental*" to acute rheumatism. "Who shall say," he inquires, "that endocarditis and pericarditis are not equally *essential* to it with inflammation of the joints?" what he means by suggesting that "both are derived from the attendant fever," is to us incomprehensible, but in this notion that in all probability the primary essence of the malady lies in the blood, there is abundant motive for coinciding.

LECT. XII. Whenever endocarditis or pericarditis form a part of acute rheumatism *practically*, they generally are added during the progress of the latter to the general disease. Sometimes however, the articular and cardiac affections supervene simultaneously, and in some still rarer cases, the cardiac take the lead. Such is Dr. Latham's experience.

The poor are the most frequent subjects of acute rheumatism, and "the time of the heart's immunity" has already, in upwards of half the cases, passed over when they are admitted into hospital. In other words, the physical signs or the functional disturbances of cardiac affection have already appeared, when the physician obtains the opportunity of acting on the general disease.

But in instances which come before us, wherein cardiac affection has certainly not yet supervened, are there any means whereby it may be warded off? Dr. Latham most legitimately rejects the vague statements that have been promulgated concerning the efficacy in this direction of large doses of opium. And on the other hand, he believes the accusation against bloodletting, as favouring the extension of the disease from the joints to the heart, perfectly unfounded. Whatever be upon the whole the

best treatment of acute rheumatism, he maintains (and we fully coincide with him) may be considered the best safeguard against its extraordinary perils.

But if the disease have actually announced itself in the cardiac membranes, what is to be done? A preliminary question is, what is to be considered to announce the disease? First, functional disturbances of the heart, though so lately unattended with physical sign; secondly, prolongation and harshness of the systolic sound; thirdly, an indefinable but unnatural sound heard in some limited spot of the precordial region; or fourthly, and *à fortiori*, an endocardial or exocardial murmur.

"When the question is of the joints, it might be laid down as a maxim of practice, to treat the rheumatism, (or the general disease,) and let the joints take care of themselves. But when the question is of the heart, the maxim might be stated conversely; to treat the heart and let the rheumatism take care of itself." So says the lecturer; and he says too that bloodletting, mercury, and opium are the remedies for cardiac inflammation as for rheumatism;—but the remedies are to be differently employed.

As soon as inflammation is known or suspected to have reached the heart, mercury must, according to Dr. Latham, be given without delay for the purpose of producing salivation. And salivation may ensue in "a day or two, or not until after several days, or a week, or after several weeks, or it may not arrive at all." Of a surety it does, as Dr. Latham "confesses," require thorough confidence in this remedy to give it for weeks, waiting, waiting, waiting "for its ultimate effect, when in the meantime it displays no proximate or intermediate effect as an earnest of its curative operation."

Venesection must be repeated again and again, "until the hardness and fulness of the pulse are much abated,"—because the disease to be combated is an inflammation. But the main object in bleeding appears—with Dr. Latham—to be to aid mercury in producing its special action.

"In men of florid aspect and full blood-vessels, though *bleeding* has not been needed for its own sake, yet has it oftentimes been *moderately* used for expediting the sensible effects of mercury. And the sensible effects thus induced have been at the same time curative. But, if the body be first made exsanguine by the lancet, you may gain the *sensible* effects of mercury, and lose the curative; for the two do not of necessity go together." (p. 250.)

Abstraction of blood by cupping or leeches or both may be needed as auxiliary to venesection; or these means may be in themselves sufficient in the way of removing blood. When the general reaction is controlled, but the local symptoms abide; or when the inflammation does not decidedly react on the system at large, then local bleeding may be had recourse to. And on the choice of leeching or cupping it is said: "when the pain or anguish, or by whatever name you call the distress, immediately referrible to the heart, begins suddenly, is at once felt severely, and augments rapidly, then cupping is the remedy; but when it comes on by little and little, and increases slowly, and has not yet reached a great amount, then leeches are the remedy. But leeches are often needed as auxiliary to cupping, just as cupping is to venesection." When Dr. Latham directs cupping in inflammation of the cardiac membranes, he has the glasses applied between the left scapula and spine: the motive and reason are obvious.

Opium is given to calm the nervous system, to abate pain and aid the effect of mercury, and in a full dose is the best means of relieving that sudden anguish which sometimes seizes the heart, and is nothing more than an attack of angina pectoris, superadded to the cardiac inflammation.

It is pointedly shown in this lecture how and why the *symptoms* are more amenable to these treatments than the *signs*; the former are vital, the latter mechanical.

LECT. XIII. The lecturer digresses into an investigation of the general question of mercury as a remedy for inflammation. By many this lecture will be highly prized. In our minds it is less novel, less striking, less logical, and less convincing than any of its fellows. Dr. Latham attempts to reconcile discordant views on the remedial influence of this agent, but adduces no fact which is not familiar to those who hold the said discordant views. That inflammations which tend to the exudation of coagulable lymph, that inflammations localized in serous membranes, that inflammations occurring in individuals of sound and robust constitution, are more readily brought under the influence of mercury than those of the converse or of other descriptions, is assuredly (whether it be true, or whether it be false) no novel doctrine. Nor has it been in anywise, or in any degree through ignorance that these divarications of inflammations, in respect of their submission to mercury, had been suggested as a fact capable of demonstration, that some men refuse to credit the alleged prowess of that mineral. *All* are aware of the suggestions; *some* receive, *others* reject them. Dr. Latham's chapter will not (if we judge aright) lessen the number of the latter by a single integer.

Again, Dr. Latham believes that mercury has two ways by which it contributes to the cure of inflammation. In the one it "constrains the morbid energy of the blood-vessels" (antiphlogistic way;) in the other it aids the reparation of parts by promoting the removal of substances foreign to them (reparatory way.) But so far from being new, this is matter of scholastic instruction. Youths are nurtured in the creed; whether they cleave to it in manhood and old age is another question. And even if they did, their steadiness might be regarded rather as the result of prejudice and habit than of conviction and experience. It is indeed more than conceivable that individuals instructed by one whose convictions are so curiously strong and so emphatically expressed as Dr. Latham's, shall, unless their own minds be of a not very usual stamp, cling to what they *were told*, and reject what they *see*. But in point of fact, what is the worth of *conviction*—be it the conviction of whom it may—concerning the agency of any medicine? Is the time so very long passed, when the *conviction* of the most eminent curers of chancre was, that lavish administration of this same mineral mercury was the only means of curing the primary disease and of warding off those secondary effects which constituted the truest and most baneful horrors of infection? And yet now, at the hour we write, it is known, it is felt, and it is irrevocably established, that there are other agents capable of arresting the progress of the local and primary malady, and that, so far from mercury charming away the risks of diseased bones and other miseries, it, the "great remedy," the "venereal panacea," is their very, their most effectual cause. And to what is due the detection

and exposure of these errors? To the deliberate rejection of *convictions* and *authority* as a first step; and to the application of a careful system of comparative *observation* as a second.

LECT. XIV. But Iritis? "If any of you have imbibed an unlucky scepticism," says the lecturer, "respecting the curtailed powers which belong to mercury, a month's diligent attendance at the Eye Infirmary will be sure to disabuse you of it." We deny the justness of the prediction. And we deny it on grounds taken by Dr. Latham himself in his pleadings for the mineral. He tells us the seat of the inflammation is all important. He makes the most notable distinction between inflammations affecting serous and mucous membranes. And why may we not push his own principle further? We do so: and we tell him in turn, that though he prove to us that mercury possesses magical powers in controlling iritis, he gains no whit in our convictions as to its efficacy in curing inflammations in general. Nor will he so gain, unless in the instance of persons ready to accept *analogy* as *identity*, and *possibility* as *demonstration*. Let it be understood that we pretend not in the remotest degree to contest the statements made by surgeons concerning iritis and its cure by mercury; but we say, the alleged effects in iritis have been *observed*,—they rest not for credence on *analogy* or *rationation*.

LECT. XV. Dr. Latham finds in his clinical records series of cases of rheumatic endocarditis referrible to the following heads: (a) Cases in which bleeding and common antiphlogistic remedies alone were employed without a grain of mercury being given, and in which all requisite evidence of perfect cure ensued. But he finds no cases in which mercury alone was given, without any antiphlogistic measures being had recourse to, and in which frequent reparation followed. While then he possesses "facts which claim an independent remedial power for bloodletting, he has none which claim the same for mercury." (b) Cases in which bleeding and mercury were employed conjointly, and the evidence of cure was satisfactory; the mercury here had produced no salivation. Here, in his own words, "one cannot be sure that the mercury had any share at all in producing the result." (c) Cases in which bleeding and mercury were employed conjointly and salivation quickly followed, and every vestige of the disease was swept away at once. But "no opinion could be formed how much of the cure was due to the bleeding, and how much, if any part at all, was due to the mercury."

"Again, I find some cases in which bleeding and mercury were employed conjointly, and salivation followed, but it was slow to arrive. And reparation was complete in the end, but it was after a long time. Here the manner and gradations by which the disease declined appeared to correspond with the sensible operations of the remedies, and to denote, with seeming exactness, the curative influence belonging to each. The bleeding was practised, whereupon vascular action immediately abated much of its force, and pain, and palpitation, and dyspnoea, immediately went away, but the endocardial murmur remained. Mercury, too, was given from the first, and day after day it was still given, yet there was no salivation. At length, however, salivation arose, whereupon the endocardial murmur ceased." (p. 298.)

Now in the remarks made on these series of cases Dr. Latham abates some slight amount of the pretensions set up for mercury, in the following wise:

"If I were called upon to bring sure proof of the remedial power of mercury in endocarditis, the last (d) perhaps, are the only cases to which I should be allowed to appeal; and these claim for it (what I have explained to be) a reparatory, not an antiphlogistic power. They do not satisfy us that it had anything to do in counteracting the progress of the inflammation. They only show us that it came in aid of nature in restoring the endocardium to its integrity, after the inflammation had ceased." (p. 299.)

But further on, language less peremptory still is held; the "*reparatory* power of mercury in endocarditis" is said to be "tolerably certain." And finally the author admits (p. 300) that he cannot from his own experience "pretend to have found a certain proof that mercury is an indispensable remedy to the cure of endocarditis." Yet, notwithstanding this, he "still fears to omit its employment in any case of endocarditis with which he has to do." This appears strange; the why and wherefore of the apprehension is left us to divine.

But Dr. Latham turns to a mode of argumentation in favour of the use of mercury of a totally different stamp—the only true mode of settling questions of therapeutics. He counts cases; roughly it is true, but still he counts, and compares. He says, on the one hand, that he has treated many cases of endocarditis with mercury, and that in not one instance has the disease proved fatal; whereas, on the other, M. Bouillaud, who employs copious and repeated bleedings with all the antiphlogistic adjuncts, but without a particle of mercury, has lost several patients. Now here are two series of comparable facts, and they are worth volumes of argumentation. They settle, beyond the chance of a cavil, this point—that the treatment of Dr. Latham is vastly superior to that of M. Bouillaud. But what is M. Bouillaud's treatment?—in plain English bleeding his patients to death. If an individual seized with endocarditis have every drop of blood in his body withdrawn for its cure, shall we ascribe his death to endocarditis or hemorrhage? Scarcely need we alter the terms of the hypothesis to make it strictly and literally applicable to M. Bouillaud's treatment. Life ebbs *à vue d'œil* under the unrelenting lancet of the member for Angoulême; and we have looked on in bewildered wonderment at the pertinacious adhesion to a practice that, on pretence of curing, slays. Consequently, in proving, as he most unquestionably does, that mercury, opium, and moderate bleeding are used with results more satisfactory than the bleedings of M. Bouillaud, Dr. Latham does little towards elevating a pedestal to the god mercury.

In pericarditis (eighteen cases, complicated and uncomplicated) mercury was always employed, but conjointly with other remedies; Dr. Latham's experience consequently furnishes no evidence of the curative effects neither of mercury or of other agents, taken separately. It would be putting the claims of mercury in an unfair light, if we did not state that in two of the three fatal cases of pericarditis treated by Dr. Latham, mercury, though elaborately poured in, did not succeed in producing salivation.

Dr. Latham's "experience (as far as it goes) tells him, that whenever the exocardial murmur has ceased, early salivation has taken place." But early salivation does not (would that it did!) involve early cessation of the exocardial murmur. His records supply the following basis for these statements:

"Case.	1st.	Salivation produced in 1 day.	Murmur ceased in 4 days.
"	2d.	" 2 days.	" 7
"	3d.	" 3 days.	" 4
"	4th.	" 4 days.	" 28
"	5th.	" 5 days.	" 14
"	6th.	" 5 days.	" 25" (p.308.)

Such were the results when mercury produced salivation *rapidly*. But in five cases it did so *slowly*; that is, it took in one case eight, in two eleven, and in two thirteen days to affect the gums. But Dr. Latham assigns the mineral nevertheless an important influence here; in doing so he places himself somewhat in the position of defending propositions not actually contradictory, but still not easily reconcilable. For we are first told that the occurrence of salivation is the mark of curative influence, and the mineral is excused in two cases (referred to just now) for not curing, because it could not succeed in salivating; and then we learn that it finishes off cures even where it is excessively slow to salivate. "Mercury in the five cases *took up the cure*, where common antiphlogistic remedies had left it, and came in with its peculiar power and efficacy to complete what they were not able to accomplish. And *then* inflammation ceased and respiration began."

In fine the lecturer compares the results of non-mercurial and mercurial treatment thus :

"In foreign practice, no mercury is used from first to last, but all the power of common antiphlogistic remedies is brought to bear upon the disease; and thus its symptoms are mitigated or subdued; yet they return again and again, and are again and again mitigated or subdued. And so the patients are kept alive for a week or ten days, and then they die in the great majority of cases.

"In English practice, mercury is given from first to last. But it is for a long time as if it were not given at all, for it produces no sensible effect. Common antiphlogistic remedies, however, are able again and again to mitigate and subdue symptoms; and so at the end of a week or ten days the patients are still alive. Yet they are ready to die; but in the great majority of cases they do not die. Salivation arrives late, and seems to save them." (p. 320.)

But while we take to ourselves merit for the cure of pericarditis, we should not forget the extent to which pericarditis is capable of existing, and, independently of treatment of any sort or kind, leaving the life of the individual it attacks immediately unscathed. Among 1263 individuals, whose cases were collected from various sources by M. Louis,\* and in which post-mortem details were given, seventy had been affected with pericarditis at some period of their existence, for the pericardium presented adhesions in seventy of the whole number. And here, be it observed, M. Louis pointedly says he makes no mention of the minor results of inflammation (the white patch.) Now these cases were observed and recorded at a period when the disease was never treated expressly, for the simple reason that it was never discovered. M. Louis concludes from elaborate examination of the facts in various points of view, that pericarditis left to itself does not terminate fatally in more than one sixth of the cases.

If Dr. Latham's statement that in England the "*great majority*" of cases of pericarditis terminate favorably, be correct, what a terribly frequent disease this must be! For observe the mortality ascribed to it in

\* De la Péricardite, in Mém. Anat. Pathol. p. 289; Paris 1826.

the Mortuary Registers for four years; we place rheumatism of course along with it, for it is the pericarditis or endo-pericarditis that kills and not the rheumatism *per se*.

<i>Registered Deaths from</i>				
	Pericarditis.		Rheumatism.	Totals.
In 1837	103	.	874	978
1838	124	.	1030	1164
1839	135	.	946	1081
1840	165	.	982	1147

These numbers are for reasons, more or less obvious to every one, and well known to those in the habit of consulting the Registers, certain to be somewhat, and likely to be considerably, below the real mark of frequency.

LECTURES XVI and XVII. The last two lectures are devoted to endocarditis and pericarditis occurring independently of rheumatism. We must leave these unnoticed, not from any deficiency of interest in them; but because we have already given the work all the space we can afford.

Our task in reviewing this book has been one of unusual gratification. Whether in assenting or dissenting, praising or blaming, we could never for a moment cease to feel that we were dealing with a work, massive and genuine in its substance, chaste and elegant in its form,—a work wrought by a man of talent, an accomplished and finished scholar. The style is in the highest degree correct and polished, richly vernacular and idiomatic, yet imbued throughout with the undefinable charm of antique classicality. At the same time it must be admitted, that delightful as it is to read, the language of this book is peculiar and savours somewhat of mannerism. Dr. Latham delights in antithesis and figure, in pithy apophthegms, in studied repetitions. To some readers, the perpetual antithesis might be fatiguing, and the frequent quaintnesses have the air of affectation; but we pronounce the book to be one of which our medical literature may be justly proud, and we rejoice to be able to class its author among British physicians. Did the profession possess within its ranks even a reasonable proportion of members of the high mental culture of this writer, its position in public estimation would be very different from that it now holds. It is only reviewers and critics—men compelled by their vocation to read (or to try to read) all that issues from the medical press,—who can truly know the full extent of the deficiencies of the profession as to mental cultivation. They, in the course of even a few months, see enough to convince them, that however desirable, just, and necessary, Medical Reform—taken in its ordinary meaning,—may be,—there are other things more necessary still, to emancipate and elevate and dignify the profession;—and these things are to be found only in a GOOD PRELIMINARY EDUCATION. It is vain to bestow on us titles and rank, to enrol us in colleges, to give us representative rights and corporate equality, to throw around us the protection of penal statutes, and to compel the public to yield us our financial dues,—if our education leaves us below the level of the literate classes of our time. If the feelings, tastes, and intellectual faculties are imperfectly cultivated, if the reasoning powers are undisciplined, if men neither know how to observe facts, nor to deduce inferences from them when observed, if they prove by the books which they write, that they know neither their own language nor any other—have they any right to expect, that the world

should spontaneously accord to them that respect, honour, and consideration, which the Polished, the Learned and the Wise, compel the world to yield to them ?

As appears, indeed, from what has been stated concerning the author's own estimate of his labours, Dr. Latham's work may be looked on as a *cardiac pathology made easy*. But it is much more than this. It is a deeply reflective volume, replete with results indicative of close observation, and abounding with hints and directions which cannot fail to give a strong and beneficial impulse to the study of cardiac disease.

#### ART. XVIII.

*On the Diseases of the Jaws, with a brief Outline of their Anatomy, and a description of the Operations for their Extirpation and Amputation, with Cases and Illustrations.* By R. O'SHAUGHNESSY, F.R.C.S.E. &c. &c. and Superintendent of the Gurrinhattah Dispensary.—*Calcutta*, 1844. 8vo.

It always gives us particular pleasure to notice the efforts of our countrymen in the remoter provinces of our mighty empire, to extend the knowledge of medical and surgical science among their immediate neighbours. A book written by *one of ourselves*, has an influence very superior to that of even a better book coming from a distance. Hence we have ever encouraged the literary exertions of our friends in India; and it is but justice to admit that these have claimed encouragement not merely from their relative but from their actual value. The present thoroughly practical little work of Mr. O'Shaughnessy (brother we presume of the eminent Indian physician of the same name) is richly entitled to the same meed of praise. It is dedicated "to the students and graduates of the Medical College of Bengal," as a manual for their guidance in proceeding to perform any of the bold operations required for the removal of the diseases described in it. The first thirty pages are devoted to a brief account of those forms of disease which most frequently give rise to the necessity for operations on the jaws, as fibro-cartilaginous tumours, osteo-sarcoma, spina ventosa, exostosis and epulis, and the results of common inflammation, exfoliation, abscess, &c.; and ten pages more are assigned to the anatomy of the parts. To both these portions we think some extension might have been given with advantage. The remaining sixty pages are occupied by a description of the mode of operating for the removal of the upper and of the lower jaw, and by the detail of five cases in which one or other of these operations was successfully performed, illustrated by lithographic drawings of four of the tumours before removal.

The following is the plan of operation recommended by the author in amputating the superior maxillary bone; and we are sure that the eminent surgeons named in our extract will be the first to encourage a free examination of their surgical proceedings. Mr. Liston and Mr. Ferguson can well afford to be criticised.

"The patient is to be placed in a strong arm-chair, with his head resting against the breast of an assistant, or on a crutch attached to the back of a chair. A second assistant stands at the patient's side prepared to make pressure on the carotid



artery, should it be necessary to do so in the course of the operation. The operator then takes his place in front of the patient, and should the extent of the disease require the removal of the whole of the malar and maxillary bones, he makes an incision commencing at the zygomatic arch, and terminating in the angle of the mouth. This incision should be first drawn over the zygoma as far as the malar eminence, then downwards over the surface of the tumour, to within half an inch of the angle of the mouth and into the cavity of the mouth, through the centre of the commissure of the lips, the knife being guided by the fore and middle finger of one hand placed for the purpose in the mouth. By dissecting this flap upwards, the whole of the attachments of the tumour may be laid bare; by detaching the upper lip, and ala of the nose, the nasal process and hard palate are exposed. The zygomatic process is to be freed from the temporal fascia superiorly, and from the masseter muscle inferiorly at the point to be divided by the nippers. The orbital process is next exposed by raising the conjunctiva of the eye with the inferior oblique muscle. All these incisions and dissections except the last should be made with rapidity, as there are no parts of any importance endangered before arriving at the orbit. The cheek is next dissected downwards and backwards for a little way, and then the hard attachments are severed with the bone nippers in the following order: The zygomatic arch is first to be cut through; the malar bone is next to be separated from its connexion with the external angular process of the os frontis, by cutting backwards into the speno-maxillary fissure, taking care to guide the forceps with the fore-finger, so as to save the eye from injury. The nasal process must now be cut through by inserting one blade of the nippers into the nostril, and the other into the angle of the orbit, from this the floor of the orbit may be divided by cutting it across with a strong knife to the speno-maxillary fissure. An incisor tooth or two if necessary, is next to be extracted, and the palate process as far back as its junction with the palate bone, cut through with the nippers keeping close to the tumour, in order not to remove more healthy bone in this situation than is absolutely necessary. The whole of the hard attachments being now divided, the tumour is found to be moveable, and in general slight pressure is found sufficient to displace it; when the knife is again resumed, and the external pterygoid muscle posteriorly, and the masseter muscle anteriorly, and the mucous membrane at the back of the mouth and cheek cut through, and the tumour removed.

"No matter how large the tumour, and how great the consequent distension of the cheek may have been, I recommend most strongly that no portion of the skin of the face if healthy be cut away. It almost invariably contracts to very nearly if not completely its natural dimensions, and if any of it has been removed with the tumour, no matter how small that portion may be, the want of skin enough is much more likely to be complained of when the cure is completed, than of there being too much if the whole has been left."

It will be seen that the incision through the integuments employed by Mr. O'Shaughnessy is less extensive than those recommended by Mr. Liston and Mr. Fergusson; on this point our author makes the following observations:

"Mr. Liston's directions for forming the flap are, to make an incision over the external angular process of the frontal bone, to be carried downwards through the cheek to the corner of the mouth. A second incision is made along and down the zygoma, falling into the other. Then the knife is pushed through the integuments to the nasal process of the maxilla, the cartilage of the ala is detached from the bone, and the lip is cut through in the mesial line.

"With great deference to so high an authority on all points of operative surgery, and particularly with reference to this operation I venture to differ with Mr. Liston as to the necessity of making three incisions through the integuments of the face, at least in the generality of cases, viz., one from the os frontis to the

mouth, a second meeting this at right angles over the malar bone, and a third along the side of the nose and through the upper lip. I think the single incision described above, will be found to answer all the purposes proposed. By it the zygoma can be exposed with ease, a little dissection upwards will lay bare the frontal and malar bones, and with the cheek, the ala of the nose and upper lip may be raised, and the alveolar and nasal processes exposed to the fullest extent. Of course cases occasionally present themselves requiring additional incisions, but I think when they can be avoided, (and I believe in the majority of cases they are not necessary,) it will be found of advantage not to make them.

"Mr. Lizars and Mr. Fergusson recommend that the saw should be applied to all the bony processes before attempting to cut through them with the nippers; but this I think quite unnecessary, as with the latter instrument they may be divided with perfect ease and a smoothness, and certainly with far greater despatch, and less pain to the patient, than by using the saw whose action can with great difficulty be confined to the hard parts, and in fact its use is only necessary in the case before pointed out, viz., to divide the malar process where the malar bone may be saved."

In all the cases detailed the tumour was of a large size. In the first, a fibro-cartilaginous tumour of the upper jaw, the mass removed weighed four pounds; and in the last, a case of osteo-sarcoma of the lower jaw, the tumour was as large as a child's head, necessitating the amputation of all the lower jaw, excepting the left ramus. All the patients did well.

#### ART. XIX.

*A Collection of Cases of Apoplexy, with an explanatory Introduction.* By EDWARD COPEMAN, Surgeon.—London, 1845. 8vo, pp. 206.

THE plan of this little work is excellent; the manner in which the materials are disposed, is highly judicious; and the whole character of the production is indicative of sound judgment, truthfulness, candour, and great modesty on the part of the author. The preface, the whole of which we here transcribe, clearly points out the nature and object of the publication:

"The following collection of cases [250 in number] is published with the view of furnishing sufficient data for determining the comparative merits of different modes of treating apoplexy, and for judging of the expediency of resorting to bleeding for the cure of that disease. It has long been my opinion that the popular, as well as professional, prejudice in favour of bleeding in affections of the brain is not justified by the result of the practice; and in order to convince myself, I collected the following cases. They are transcribed from various books and journals; a few are from my own case book; and I have purposely avoided introducing any author's remarks or comments, that each person who examines them may form an unbiassed opinion. I have arranged in a tabular form for easy reference, the liability of sex and age, the mortality of the disease, the effect of treatment, &c., and have also, not without hesitation, and with a sense of my unfitness for the task, embodied my own views of the subject in a brief explanatory introduction. For this I have no excuse to plead save my anxiety to discover, and to impress upon others the necessity for endeavouring to find out, a more safe, scientific, and successful treatment of apoplexy." (Preface.)

In the "Introductory Remarks," extending only to sixteen pages, Mr. Copeman gives a neat summary of the statistical results furnished by the cases, which well merits perusal. The following extract exhibits the

general conclusions as to treatment. We believe Mr. Copeman will find, on inquiring, that the most eminent physicians in this country have long adopted his views as to the impropriety of bloodletting, as a rule of practice, in cases of apoplexy. This warning, however, is, we fear, yet too much called for in some parts of the kingdom.

"A comparison of the success attending the practice of bleeding in apoplexy, with that where bleeding was not employed, as shown by the following cases, is decidedly in favour of the latter; and should be considered sufficiently correct, from the number of cases reported, to neutralize the far too prevalent idea that bleeding is the *only remedy* to be depended upon in apoplexy. The practice of giving emetics when the attack has succeeded a full meal, has not only been safe but effectual. In cases occurring in old age, brandy and other stimulants have restored animation and removed the apoplexy. Purgatives have always been acknowledged to be of essential service in most cases that have recovered. The application of cold to the head, sinapisms to the lower extremities, warm pediluvia, and vesications, have each in their turn appeared to be useful; and are at all events free from the objection that they can either produce or add to the mischief." (pp. 14-5.)

The following statistics are interesting :

Males.	Females.	Total.	Cured.	Relieved.	Died.
170	80	250	68	7	175
Proportion of males to females					2½ to 1
Proportion of deaths to cases					1 in 1½
Proportion of deaths to recoveries, including those relieved					2½ to 1
No. not bled, 26.		Cured, 18; died, 8			
No. bled 129.		,, 51; ,, 78			
No. of cases in which the treatment is specified					155
Proportion of cures in cases treated by bleeding					1 in 2½
Proportion of deaths in ditto, about					1 ,, 1½
Proportion of cures in cases not bled					1 ,, 1½
Proportion of deaths in ditto					1 ,, 3½
			No.	Cured.	Died.
Temporal artery opened			2		2
Cupping employed			11	6	5
Leeching			14	4	10
Bleeding in the foot			17	13	4
General and copious bleeding			85	28	57
			129	51	78.
					(pp. 15-6.)

The sole defect in this book is the scantiness of its materials. Instead of giving the results of two hundred and fifty cases, it ought to have given the results of twice or thrice as many thousands, which the records of medicine could easily have supplied. The author's residence in the country, no doubt, put it out of his power to obtain such data. But we hope he may yet have opportunities of finding them; and we counsel him not to lose sight of the chance of doing so. His present conclusions, however probable, can only be received as inferences provisionally deduced from a few cases of apoplexy; and not at all as the exposition of the present state of our practice and knowledge respecting the natural history and treatment of this disease.

## ART. XX.

*De Diagnostique Anatomique des Maladies du Foie, et de sa valeur au point de vue thérapeutique. Thèse de Concours.* Par MAXIME VERNON, M.D.—Paris, 1844. 8vo, pp. 84.

THE phrase anatomical diagnosis being comparatively new, M. Vernon considers it a matter of necessity to define the words, and does so by stating them to signify that species of diagnosis which is applied to the "local determination of the seat, extent, and nature of the diseases of any organ, and which in order to attain its end, can only have recourse to physical characters appreciable by the senses." Here we have obviously the "physical diagnosis" of various authors in our own country; and the British term seems to us, of the two, unquestionably the more precise and significant of the thing meant.

It is to be remembered the question which the chances of the *concours* gave the author to handle is to what extent this kind of diagnosis applied to the liver and gall-bladder, is capable of lending guidance in the *treatment* of diseases of those organs.

After a few introductory flourishes, M. Vernon attacks his subject by giving an outline of the physical means whereby the natural condition of the liver and gall-bladder may be established. He "purposely omits inspection of the region of the liver; believing that in the state of health, this method of examination furnishes no help in determining the form and dimensions of the organ. Here is an exposure of complete ignorance of the observations of Dr. Edwin Harrison, observations proving the precise reverse of the position thus heedlessly laid down. But M. Vernon is, doubtless, too good a disciple of the Paris school, to fancy for an instant that anything worth being known could emanate from "nous autres pauvres insulaires."

Percussion is the true method of ascertaining the outline of the liver, and "to M. Piorry are due *all* existing researches on the subject." Now we have certainly borne our testimony more than once in this Journal, to the merits of the indefatigable percussor, and cannot be therefore supposed to be quite ignorant of their nature and scope, but we do confess this piece of outrageous absurdity startled us, and appeared inexplicable until we discovered that M. Piorry was one of the judges of the concours, — immaculate, unbending judges, upon whose ears flattery falls in vain. "Comme il a la tête montée, ce pauvre Piorry, depuis qu'il a été nommé Professeur," say the sneerers of the Ecole de Médecine; but in the name of frail human nature, if he often get such doses of grovelling adulation, as the specimen just given, can the poor man be expected to consider himself quite on the level of his minions?

The following passage contains the results of some inquiries recently made by M. Piorry upon percussion of the liver posteriorly:

"The limits of the liver are more difficult to determine behind than in front; the difficulty depends upon the presence of a very thick lamella of lung interposed between the liver and thoracic parietes, and besides, in respect of the inferior border, upon the presence of the kidney and of the colon filled, as this frequently is, with solid matters. The following is the manner of proceeding. Percussion should be practised in a vertical direction from above downwards, a few centimeters distance from the spine; the percussion at the upper part should be very strong, in order that the dull sound of the liver may be detected through the interposed lung. Once the upper point of dullness ascertained, percussion should be gentle

and superficial. The point where the lung ceases, is soon discovered and the presence of the liver disclosed by its special dullness and resistance. The dullness of the liver is often confounded inferiorly with that of the kidney. . . . More marked resistance of the finger, and more complete deadness of sound point to the presence of the latter organ, and separate it from the liver."

Now we have not the least difficulty in assigning to M. Rayer the merit of having much more fully, clearly, and satisfactorily pointed out the means of physically distinguishing the liver and kidney, than M. Piorry does in this passage; but M. Rayer was not a "judge," so that of course M. Vernois had nothing to do with him.

The physical methods of examination applicable to the liver and gall-bladder in a state of disease, are enumerated by M. Vernois as:—"inspection; palpation; touch; pressure of the hepatic and adjoining regions; local and comparative mensuration; percussion; auscultation; ballottement; fluctuation; particular noises, and special sensations; puncture with the exploring needle; decumbency of the patient."

The only circumstance under which, according to M. Vernois, inspection can aid in disclosing the *nature* of enlargement of the liver, is when superficial visible œdema, more or less distinctly circumscribed, coincides with that enlargement; abscess of the organ may then be suspected. In some doubtful cases this appearance might justify the observer in practising punctures or incisions,—this is the only way in which *inspection* can throw light on treatment.

The very first proposition M. Vernois lays down respecting the position of the liver as ascertainable by percussion, (although he has had the *toute puissance* of M. Piorry's plessimetric exploits to guide him,) is an error. Whenever the liver extends, even so slight a distance as three centimetres above the fifth rib, it is, he affirms, abnormally elevated. Now it has on the contrary become matter of mathematical certainty for us since we became acquainted with Dr. Edwin Harrison's method of investigating the point, that in the state of perfect health the upper boundary of the organ commonly reaches the fourth rib, or close to this.

"Bleed largely, or purge energetically a patient labouring under hyperhepatohemia, [which being interpreted means, we presume, congestion of the liver,] and in a few days or hours, *often almost immediately after*, [?] diminution in the size of the liver may *easily* be ascertained." How pretty all this looks on paper!

Auscultation, generally speaking, can afford no *direct* information concerning the condition of the liver. In the following case observed by the author in M. Andral's wards in 1834, it might (had such cases been previously observed) have helped directly to establish the diagnosis. A man aged 40, had an abdominal tumour extending from the epigastrium to the region of the liver, and furnishing under pressure a very manifest crepitating sound, such as might be supposed to arise from the displacement of fragments of solid matter. The patient died of acute peritonitis. In front of the liver an enormous cyst was discovered, containing fragments, of some size, of cretaceous matter, associated with a sort of whitish pulpy substance, the cyst had given way during life; some of its contents fell into the peritoneal sac, hence the fatal inflammation of that membrane.

With all desire to discover any further novelty in the pages of M. Vernois, we have failed to do so. This thesis, however, is not without its value, as a summary of things already known.

## PART SECOND

## Bibliographical Notices.

ART. I.—*The Physiological Anatomy and Physiology of Man.* By ROBERT BENTLEY TODD, M.D. F.R.S., Professor of Physiology in King's College, London; and WILLIAM BOWMAN, F.R.S. Demonstrator of Anatomy in King's College, London. Part II.—London, 1845. 8vo, pp. 248. With 50 Wood Engravings.

WHEN we noticed the appearance of the First Part of this work, two years ago, it was with the full expectation that the authors would redeem the pledge which they voluntarily gave to the public, by the speedy completion of the treatise. They then announced that it would be comprised in *two* more parts; and that these were in such a state of preparation, that their publication might be anticipated in the course of the ensuing year. Two years have elapsed, and now the Second Part appears, with the announcement that *two more* parts are yet to come; and warned, it may be presumed, by past experience, they do not promise anything more respecting their time of publication, than that they will follow "at an early period." Now, whatever may be the necessity for adopting this system in the production of an extensive encyclopædial work which no publisher would venture to bring out in a complete form, even if an editor could prepare it, the same necessity does not hold in the case of a systematic treatise upon a single subject, within moderate compass, the whole of which, on every account, ought to be in the hands of the reader at once. We think that the public have a claim to be considered, as well as the author; and that it is the duty of the latter, either to keep back his work until the whole is so nearly prepared that the immediate completion of it is almost a matter of certainty, or, if his preparations be less advanced, to sacrifice every other object, if necessary, to the redemption of his pledge.

We can scarcely recall a single instance in which a systematic medical treatise published in parts, has been completed within the time first specified, whilst, on the other hand, the list of unfulfilled pledges of this sort is a pretty long one. For these reasons, we have invariably set our faces against the system; and have determined to give no more than a passing notice to any work, however valuable it might appear, until it should be completed,—except in very particular cases. The importance of the work before us may, possibly, make us break through our rule, in its favour. For the present, however, we shall content ourselves with stating that the Part before us is worthy of that which preceded it, and, consequently, most creditable to its authors; that it is devoted to the nervous system and its dependencies; that it contains the results of a large amount of original research, together with a comprehensive summary of what has been done by others;—and that the illustrations are surpassingly excellent.

ART. II.—*Outlines of Military Surgery*. By SIR GEORGE BALLINGALL, M.D. F.R.S.E. &c. Third Edition.—*Edinburgh*, 1844. 8vo, pp. 568.

It may be considered a sufficient testimony to the utility of these *Outlines*, and to the able manner in which they have been executed, that a third edition has been called for. Sir George Ballingall has taken the opportunity to add to the work and, as we think, materially to improve it. This is most evident in that part which treats of the diseases of troops on foreign stations, which he has illustrated by reference to the 'Statistical Reports on the Health of the Navy and Army,' although he has perhaps not drawn upon these so liberally as their importance and indisputable authenticity would have warranted. We are surprised to find that he has not in any instance referred to the Statistics of the United States Army.

The principal part of the work is devoted to the consideration of "those surgical accidents and diseases peculiarly incident to military and naval men; and to which the nature of their profession exposes them in all quarters of the world." In the execution of this part our author has evidently taken great pains to obtain the most recent information on the subjects he treats of, and has discussed in a very temperate manner the various *questiones vexatæ*, giving due weight to the opinions of those with whom he differs.

We could have wished, however, that he had curtailed the portion of his volume which treats of surgery, and extended that embracing what John Bell termed military economics. On the former subject we have numerous works, as those of Liston, Fergusson, Syme, Druitt, &c., while on the latter a good one in the English language is still a desideratum. As a reason for the plan he has adopted, our author expresses a fear "that in a period of long protracted peace there is some risk of the medical officers of the army overlooking the importance of the surgical department of their profession." In this fear we do not participate; the éclat attending successful operations has ever led a large proportion of students to devote themselves to surgery, while the less imposing but no less arduous duties of the physician, have been looked on as very subordinate matters. We venture to assert that many more will at all times be found to devote themselves to surgical practice than to that untiring watchfulness and patient superintendence, which is of so much importance in those to whom the health of a body of troops is confided.

Of the great value of this part of a medical officer's duty on service, Mr. Guthrie gives the following most striking example:

"I remember a village on the great plain of the Guadiana, near Merida, in which three regiments were quartered in the sickly season in the autumn, when fever prevails. Three rows of hillocks marked the last resting place of the dead on earth, and my attention was attracted by one row being much shorter than the other two. I found on inquiry that the regiments were very much of the same strength, and quite under the same circumstances. The doctors were equally able: two were men entering on rather the middle period of life, the third was a very young man and perhaps the worst doctor of the three; but the short row of tumuli belonged to him. I was very desirous of making this out, and after carefully visiting all the hospitals and quarters ascertained the reason. He was the better soldier, if not the best doctor. His hospitals were in better order, the

material was more perfect, the labour bestowed on every part, except in physic, was greater, and five per cent. at least of human life was the saving and the result. I never saw it otherwise." (Clinical Lectures, p. 20.)

We have made these remarks in the hope that when another edition is required, our author will devote a greater space to the consideration of the various means necessary "for the prevention as well as the cure of disease; for it is by prevention rather than by cure that the efficiency of our fleets and armies is to be maintained." The present volume as a work on Military Surgery will add to the already high reputation of the author, and should form part of every military and naval medical officer's library. It will, however, we think, be more appreciated by gentlemen on, or returning from, foreign service, who wish "to refresh their memories or renovate their surgical knowledge," than by young men commencing their career in the public service; to the latter, the addition of a practical treatise on military economics would be a valuable acquisition.

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ART. III.—*Practical Remarks on some exhausting Diseases, particularly those incident to Women*. By SIR JAMES EYRE, M.D.—London, 1845. 8vo, pp. 76.

THE object of this tiny volume, which it would be somewhat difficult to gather from its title, is to recommend the *oxide of silver*—originally introduced some years since into practice by Mr. Lane—"in pyrosis, in certain cases of gastric disorder, in the slowly exhausting hemorrhage from mucous surfaces, but, above all, in atonic menorrhagia, which, though arising from various causes, and hence often most perplexing to the practitioner, will, it is confidently predicted, become henceforth as amenable to treatment as it has been hitherto unmanageable." (p. 1.)

The dose in which Sir James Eyre employs this remedy never exceeds three grains daily, and he usually commences with quarter or half grain doses thrice a day. The existence of febrile action in any considerable degree, is the only circumstance that contraindicates its employment, and though he disclaims for it the character of a specific, yet the detail of thirty-nine successful cases, and no mention of its failure in a single instance, would seem almost to have warranted his claiming for it that title. For ourselves, we are much too old, and we should have thought Sir James not young enough to be seduced, by the successful issue of a few cases, into the somewhat juvenile beatitude of indulging hopes of this sort. The oxide of silver may be deserving a place among the thousand remedies that distract doctors; we do not say that it may not yet be proved to be a truly valuable therapeutic agent: on Sir James's authority, and on Mr. Lane's, we recommend our readers to give it a trial,—a fair trial; but our worthy knight must excuse us for saying that there is scarcely one medicament in our boundless store, however much scorned now, that has not in its day had as good (or better) evidence of its power and value, as he has adduced in favour of his oxide. It appears, also, on the authority of Mr. Lane himself, that this preparation, contrary to what was expected and believed, does occasionally blacken the skin like the nitrate; and while such a terrible chance overhangs its employment,—we should have unques-



tionable evidence of its superiority to less deleterious agents, before we accept it as a medicine of ordinary use. What volumes have been written on the vast powers of the nitrate of silver, in curing epilepsy, gastralgia, &c. &c. ! And yet we are not afraid to say that the positive facts of some dozens of real men and women, existing within this realm, silvered into an everlasting blueness, are evils of a magnitude to counterbalance, a hundred fold, all the demonstrable good that was ever produced by all the caustic that was ever swallowed.

In the brief statement given above, our readers are presented with the whole sum and substance of Sir James Eyre's observations ; for the details of the cases are too meager to throw any fresh light on the diseases which they are intended to illustrate, and the practical remarks consist of quotations from 'Copland's Dictionary,' the 'Medico-Chirurgical Review,' &c. &c. which answer no very obvious purpose except that of making the little book bigger.

The results of Sir J. Eyre's experience would have become much more extensively known, if he had embodied them in the form of a brief communication to one of the weekly medical journals ; and we cannot understand the strange error of judgment into which he has fallen, in supposing that he has chosen a mode of announcing them either "more comprehensive," or "more convenient," than such a vehicle would have supplied. This, however, is more Sir James's affair than ours ; and we must not conclude without qualifying what we have already said by this additional remark, that the profession is under obligations to any of its members, who carefully and faithfully exerts himself to improve the therapeutical part of the art ; and this our author has certainly done.

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ART. IV.—*History of the York Dispensary, containing an Account of its Origin and Progress to the present time, comprising a period of fifty-seven years.* By OSWALD ALLEN.—*York*, 1845. 8vo, pp. 116.

HISTORY teaches the lessons of experience to those who will listen to it, and rightly interpret it. Although the history of the York Dispensary possesses chiefly a local interest, it cannot fail to be of value to those who intend to found a medical charity, as presenting a fair instance how a useful institution may arise from small beginnings, and showing clearly the nature of the difficulties that may be expected in maturing a medical charity, and how those difficulties may be surmounted. The author is the father of the profession in York, the treasurer of the charity, and the sole survivor of those who co-operated with him in founding the Dispensary. It is written in an excellent spirit, and proves that Mr. Allen enjoys a green old age, and that the retrospect of his useful life has not been made, at least, with painful feelings. These are neatly stated in a modest preface, and are such as might be expected from an intelligent practitioner who has practised his profession from a love thereof. We commend this little work to the notice of those who take a special interest in medical charities.

ART. V.—*Practical Observations on the Diseases most fatal to Children; with reference to the propriety of treating them as proceeding from Irritation and not from Inflammation.* By P. HOOD.—London, 1845. 8vo, pp. 232.

No one can have been long engaged in the practice of medicine, without meeting with cases that present many of the symptoms of active inflammatory action, but which need a treatment the reverse of antiphlogistic, and in which organic changes occur very dissimilar from those which result from inflammation. Such cases are far more frequent in children than in adults, while many circumstances concur to render their discrimination in young subjects a task of exceeding difficulty. The essays of Dr. Gooch and Dr. Marshall Hall on the hydrocephaloid disease, and that of MM. Bailly and Legendre, on lobular pneumonia, show, however, that the problem may be worked with a fair prospect of success, and that its solution is in each case so important as fully to repay the most laborious investigation. When we first opened Mr. Hood's book it was with the hope of finding in it an exposition of the different characters that distinguish the inflammatory from the non-inflammatory diseases of childhood, and we trusted that even if it should not embody the results of very profound research or elaborate inquiry, it would at least present the fruits of careful observation at the bed-side of the sick, and contain much of real practical value.

We regret, however, that these expectations have been disappointed. Instead of pointing out the distinctions between inflammatory and non-inflammatory diseases, Mr. Hood has contented himself with absolutely denying the occurrence of inflammation in childhood. A few hours spent in examining the dead body would have shown him the error of such a statement. The work, however, contains no evidence that Mr. Hood ever passed a single hour in any such examination, and though professedly treating of *the diseases most fatal to children*, in no instance is there any account of the morbid appearances to which they give rise.

Having gone carefully over the book, we had thought of pointing out some of the more gross mistakes into which this neglect of morbid anatomy has led its author, but we abstain on observing that Mr. Hood addresses his lucubrations not to members of our profession only, but to "parents," and "to all persons who may be interested in the matter." Many of his statements which would otherwise have been totally inexplicable are thus fully accounted for, while we do not think it worth while to examine them ourselves since the author appeals to another tribunal than that of medical criticism. Mr. Hood, however, must have known that in appealing to any but professional men, on a subject so difficult as the investigation of the mode of treatment which may be most appropriate in the more serious diseases of children, he was bringing his cause before a jury wholly incompetent to try its merits. The fault he has committed is one which implies not mistaken judgment, but want of self-respect, want of just appreciation of the dignity of his calling, and of the dignity of truth. We regret to be compelled to speak thus about a gentleman whose work gives indications of talent quite sufficient to convince us that had his aims been higher he might have written a book that would have been honorable to himself and useful to the profession.

- ART. VI.—1. *The Seven Books of Paulus Ægineta. Translated from the Greek. With a Commentary embracing a complete view of the knowledge possessed by the Greeks, Romans, and Arabians on all subjects connected with Medicine and Surgery.* By FRANCIS ADAMS. In Three Volumes. Vol. I.—London, Printed for the Sydenham Society, 1844. 8vo, pp. 684.
2. *Observations on Aneurism, selected from the Works of the principal writers on that Disease from the earliest periods to the close of the last century.* Translated and Edited by JOHN E. ERICHSEN, Lecturer on General Anatomy and Physiology at the Westminster Hospital.—London, Printed for the Sydenham Society, 1845. 8vo, pp. 524.
3. *Animal Chemistry, with reference to the Physiology and Pathology of Man.* By Dr. J. FRANZ SIMON, Fellow of the Society for the Advancement of Physiological Chemistry at Berlin, &c. &c. Translated and Edited by GEORGE E. DAY, M.A. & L.M. Cantab., Licentiate of the Royal College of Physicians. In Two Volumes. Vol. I.—London, Printed for the Sydenham Society, 1845. 8vo, pp. 360.

OUR readers are aware of our determination not to review any of the works of this society; and the excellent choice of works hitherto made by the Council, and the admirable execution of their important and difficult tasks by the respective editors, give us no opportunity to criticise them. It appears from the Treasurer's Report, that the number of subscribers who contributed to the funds of the Society last year, was 2032; and while the Society can afford to supply each member, in return for his guinea, with three such splendid volumes as are now before us (the selling price of which in the shops, at the ordinary rate, would be at least *double* the subscription,) we shall have, every Quarter, less and less reason for wishing to convey to the profession information respecting these publications. A few years more, and every member of the profession who studies his science and his art, must be a member of the Sydenham Society.

We cannot better or more concisely express our sentiments as to the value of the first two works on our list, than by quoting the words of the learned and excellent secretary, Dr. Bennett, as given in the Third Report of the Society just published.

"If among the original objects of the Sydenham Society those which relate to ancient Medical literature are to be attained at all, the Council feel satisfied that in the estimation of all whose opinion is of value, these objects are likely to be gained by the publication of such a work as the '*Paulus Ægineta*' of Mr. Adams. Replete with learning, and comprising the most complete view that has ever been given of the knowledge possessed by the Greeks, Romans, and Arabians, on all subjects connected with medicine and surgery, this work will prove a lasting monument of the industry and erudition of the editor, and an honour to his country. ....

"The direct practical importance of an acquaintance with the labours of our forefathers is well illustrated by the volume of '*Observations on Aneurism*,' in which are contained, amidst much that will be interesting and valuable to the surgeon, the results of former trials of certain plans of treatment, which, after having fallen into desuetude, are, in the present day, again claiming attention. The Council have the satisfaction of knowing that, in the estimation of the

highest existing authorities on this subject, a valuable and timely boon has been conferred on the profession by the publication of the 'Observations on Aneurism.' (pp. 3-4.)

Of the third work, we need say nothing more in commendation than that it is worthy to take rank with its fellows. It was deprived of the benefit of Dr. Bennett's verdict, simply because it was not printed at the date of his Report.

We must give one word of commendation to the Council of the Society, for their attention to the minor, but still not unimportant qualities of their publications. The style in which the volumes are got up is very superior. The paper and print are excellent, and the binding chaste and elegant.

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ART. VII.—*A Pentaglot Dictionary of the Terms employed in Anatomy, Physiology, Pathology, Practical Medicine, Surgery, Obstetrics, Medical Jurisprudence, Materia Medica, Pharmacy, Medical Zoology, Botany, and Chemistry*; in Two Parts: Part I—with the leading term in French, followed by the Synonymes in the Greek, Latin, German, and English; Explanations in English; and copious Illustrations in the different Languages. Part II—A German-English-French Dictionary, comprehending the Scientific German Terms of the preceding Part. By SHIRLEY PALMER M.D., of Tamworth and Birmingham.—London, 1845. 8vo, pp. 656.

In our Journal for October 1836, (Vol. II, p. 508,) we gave a very full and very favorable notice of the first two Parts of this work,—the plan and character of which are set forth in the title which we have transcribed in full. The long delay of the present Part has—we are sorry to see from the preface—been partly occasioned by the author's ill health, and has partly arisen from extrinsic causes for which he is not responsible. Notwithstanding the radical defect, of the French and not the English being made the leading language of the dictionary, and although the original plan, as we stated in our former notice, is faulty, both as to what is given and what is withheld, we do not hesitate to say that the whole is in the highest degree creditable to the author. It is indeed a splendid monument of his learning, industry, and talents, and cannot fail to be most useful to all who understand French. Indeed, the possession of it is indispensable to every medical man who looks beyond the limits of English medical literature. The German vocabulary appended to the present part renders the dictionary now equally available to the German as to the French reader; and if the author carries out his plan of compiling a Supplement containing similar vocabularies of the Latin, Italian, and English synonyms, the work will be then perfectly complete, and the inconvenience of the French vocabulary be entirely removed. We strongly recommend the learned lexicographer to lose no time in taking in hand this most important and almost necessary complement of his labours. We regard the whole medical profession throughout the world, as under great obligations to Dr. Palmer for what he has already done, and we earnestly recommend his work to all our readers at home and abroad.

ART. VIII.—*Introduction to the Study and Practice of Midwifery.* By W. CAMPBELL, Late Surgeon R.N., and by ALEXANDER D. CAMPBELL, B.A. Trin. Coll. Dub., &c. 2d Edit.—*Edinb. and Lond.*, 1843. 8vo, pp. 800.

WE have to apologize to the authors of this book, for having so long neglected to notice it. The omission to do so at the time of its publication, arose from an accident; and now, when we are prepared to rectify our oversight, our arrangements preclude us from giving more than a mere notice of its contents and general character. In it are embraced all the various subjects belonging to the practice of midwifery: the anatomy and physiology of the female organs of generation in the unimpregnated and gravid states; the medico-legal questions connected with them; the pathology and treatment of the diseases incidental to women and children. Without containing any very novel views or important additions to practice or science, it may fairly be characterized as constituting a safe guide, and a good epitome of practical information, which may be perused with advantage by those who are commencing either the study or practice of midwifery.

ART. IX.—1. *The London Medical Directory, 1845. Containing the name, address, qualification, official appointments, honorary distinctions, and literary productions of every Physician, Surgeon, and General Practitioner resident in London.*—*London, 1845.* 8vo, pp. 180.

2. *The Medical Directory of Great Britain and Ireland, for 1845.*—*London, 1845.* 8vo, pp. 672.

THE title-page of the first of these volumes, which we have transcribed in full, gives a correct representation of its object and substance. As far as we can judge from occasional inspection of its contents, when needing its assistance, we think the information contained in it both extensive and accurate. As a record of the literary labours of metropolitan practitioners, it cannot fail to be both useful and interesting; and as the first attempt made in this country to obtain and make public this sort of knowledge, it may justly claim the attention and patronage of the profession. In future editions it will, doubtless, be both enlarged and improved.

The second work is on a much more extended scale, and has been compiled on a different plan and with different views. It has no pretension beyond that of being a mere directory of names and addresses; but as it professes to record those of the whole profession throughout the three kingdoms, its compilation must have been a work of immense labour. It contains three several Directories, one for England and Wales, one for Scotland, and one for Ireland; and gives, besides, lists of all the poor-law unions in England, with the surgeons' names; of the lunatic asylums; of the medical officers of the army and navy, &c. The Directory of England contains—1, a list of all medical men qualified to practise in England and Wales; 2, a list of all the medical men practising in London under two heads, physicians and surgeons; 3, a list of all the towns in England, with the names of the medical men in each.

Such a work as this cannot fail to be useful if carefully compiled. As might perhaps be expected in a first essay, the volume contains a vast number of errors and imperfections, which it is to be hoped may be corrected and removed in subsequent editions.

## PART THIRD.

## Original Reports and Memoirs.

REPORT ON THE PROGRESS OF  
PATHOLOGY, PRACTICAL MEDICINE, AND THERAPEUTICS,  
DURING THE YEARS 1842-3-4.

By JAMES RISDON BENNETT, M.D. Edin.

Assistant Physician and Lecturer on Materia Medica and Therapeutics at St. Thomas's Hospital.

This Report is similar in character to those which have already appeared in this Journal. It does not profess to give a complete index to all that has been written on the subject of which it treats, but simply to present a general view of the most important facts and opinions, whether revealing anything new or confirming or refuting what is old. As it is proposed, in a subsequent Report, to furnish an account of the progress of knowledge in the departments of Chemical and Microscopic Pathology, with a few exceptions, no reference has been made to these branches of medical science. Nor has any notice been taken of the important subject of insanity, partly because nothing very new has appeared, with the exception of the results of a more general and extended trial of the non-restraint system of treatment, and partly because any satisfactory notice of the statistical and other reports of the various institutions for the treatment of the insane would have required a larger space than could have been given. And, indeed, the length of period comprised in this Report, from October 1, 1842, to Oct. 1, 1844, has rendered it necessary both to curtail and omit much that might otherwise have demanded notice. The subjects treated of, have been arranged under two divisions. 1, Pathology, and 2, Practical or Clinical Medicine and Therapeutics. In these and the minor divisions, convenience and perspicuity have been considered rather than strict nosological propriety.

## PATHOLOGY.

## I. GENERAL PATHOLOGY.

## 1. ETIOLOGY.

*Malaria, its active principle.* Professor Gardner,\* of Hampden Sydney College, in an interesting paper on the active principle of Malaria, endeavours to show that sulphuretted hydrogen is the active agent in the production of the fevers of malarious districts, both maritime and inland. His arguments and facts are arranged under the five following propositions: 1st. "Sulphuretted hydrogen gas exists in the stagnant waters and atmospheres of certain marshes." In support of this proposition he adduces the authority of Professor Daniel, who in 1841, found large quantities of the gas in specimens of water sent from several of the African rivers and adjoining seas,—of Mr. Gardner of London, who found it in water from the Bonny and the Lagos,—and that of Dr. Marcet, who detected it in the Yellow Seas. In order to ascertain whether it exists also in inland malarious districts, Dr. Gardner instituted the following experiments. Having carefully cleaned pieces of silver coin by repeatedly boiling them in solutions of caustic potash and alum, he suspended them by silk thread in three small rivers, the Buffalo, Briery, and Appomattox, in the stagnant water of marshes, in small springs, and in the air over rivers and marshes. In marshes and shallow springs the coins became stained in twenty-two hours. In deep rivers it required sometimes a month, and in the air sometimes longer; but in all the experiments the silver was ultimately stained. The next object was to ascertain the causes of the development of the gas. Four conditions he found necessary: decaying vegetable matter, a rich alluvial soil, saturated with *spring water*, (or water

\* American Journal of Medical Sciences, April 1843.

which had percolated the soil,) and the action of the summer heat. Decaying vegetables and alluvial soils contain carbon in excess, and are powerful deoxidising agents. If a sulphate be brought into contact with them, it will be decomposed by the destruction of its acid. Vegetables contain sulphates of lime, soda, potassa, and magnesia. Spring water also usually contains sulphates of lime and magnesia, which Professor Daniel has found are decomposed by decaying leaves. The comparative amount of deleterious gas is determined by the amount of the sulphates, for the requisite changes in which, a certain degree of heat is necessary. Dr. Gardner's 2d *proposition* is, "The character of malarious regions is similar to that of those in which sulphuretted hydrogen is generated." In support of this he adduces the facts recorded by Messrs. Laird and Oldfield in their account of the Niger Expedition and numerous others of the same kind, many of which are very striking and decisive. He, however, admits that "it would be premature to state that in every case where bilious fever has been detected, sulphuretted hydrogen also existed. The catalogue of endemics attributed to this cause includes a host of ailments, from ague to yellow fever, typhus, and plague itself. There is some mistake here, either the exciting cause varies, or the whole of these diseases are not produced by miasma. Some of these complaints are undoubtedly produced by other causes." Again, he says, "in some of the cases adduced in the enumeration of places remarkable for malaria, it is questionable whether the means for generating sulphuretted hydrogen exist." "This is the case in all inland positions where it is uncertain that sulphates are found in the waters of the place." 3d *proposition*. "Certain agents have been supposed to give activity to the exhalations arising from marshes, called malaria." Dew being acknowledged to be the vehicle which conveys it, watery vapour has been regarded as the noxious matter. M. Boussingault has recently advocated the theory that carburetted hydrogen is the active agent. He detected carbon in the dew of marshes, in the department of Ain, and having ascertained that hydrogen existed in the same situations, he concluded that carbon existed as carburetted hydrogen. This gas is undoubtedly produced wherever vegetable matters are undergoing putrefaction; but, remarks Dr. Gardner, "the conditions which increase the unhealthiness of particular localities do not contribute to the increase of this gas. The most dangerous sites are on the sea-coast, and where sea water finds access to marshes. Those circumstances which augment and even produce malaria (as in the Ligurian marshes and those of South Carolina) are in no way concerned in the development of carburetted hydrogen gas." Under the head of his 4th *proposition*, that "The properties of malaria are fully recognized by the profession," he refers to the principal of the best established facts in reference to the outbreak, spreading, arresting, and extinction of malarious diseases: and then gives as his 5th *proposition*, "Sulphuretted hydrogen is the active agent in the production of those forms of malarious fevers met with on the sea-coast, and the diseases belonging to the same class found inland." The sulphur is supposed to exist in malaria as a component of an organic body, containing carbon, hydrogen, sulphur, and water. In a supplementary letter, Dr. Gardner attempts to account for the absence of malaria from certain marshes—viz., those around Boston, (U. S.), and the bogs of Ireland—by supposing that iron, or zinc, or other metals exist in the subsoil, and that these by uniting with the sulphur prevent the development of sulphuretted hydrogen. These views of Dr. Gardner are in opposition to the opinion expressed by Dr. Pritchett,\* in his account of the African remittent fever, for he denies the existence of sulphuretted hydrogen in the water of the Niger, and maintains that, "even if it were evolved from the waters of the west coast of Africa, it would not explain the fevers which there prevail. He indeed denies altogether the miasmatic origin of the fever, which he attributes to the ordinary atmospheric influences of hot climates.

\* Some Account of the African Remittent Fever, which occurred on board Her Majesty's steamship Wilberforce, &c.; London, 1843.

Dr. McWilliam also\* concurs in denying the existence of sulphuretted hydrogen in the waters of the Niger, and in maintaining that what was detected in the specimens previously sent to England originated in the decomposition of the contents of the bottles. Dr. Minzi,† of the Central Hospital of Terracina, with a view to determine whether in the genesis of paludial fevers there was really any special miasmatic principle, collected, by means of an apparatus containing a frigorific mixture, the dew which fell in the vicinities of Rome and Terracina. Of this he and several other persons drank portions varying from  $\frac{3}{4}$  to  $\frac{3}{2}$  without any ill consequence. Wounds on the legs of two peasants were also washed with the dew water without any bad effect. He concludes therefore that the miasmatic principle, if any such exist, does not reside in the dew of malarious districts.

*Geological causes of fever.* Dr. Heyne, of Madras,‡ in an important paper on the hill fevers of India, ascribes as their principal cause the geological character of the hills among which they occur. Hill fever, he says, invariably exists among certain descriptions of hills, whilst others of a different geological character are as invariably free. Wherever the iron granite, or magnetic iron-stone rocks occur, there will be fever, whilst the hills whose strata are free from ferruginous compounds are equally free from the destructive fever to which Dr. Heyne alludes. The ferruginous granite rocks are remarkable for their disintegration, not only separating in the hot season into large masses of many tons, but crumbling also into their constituent parts, and forming an abundance of sand which is attracted by the magnet, though this is not affected by the rocks in masses. Dr. Heyne therefore attributes the fevers of these hills to the magnetic or electric fluid which seems to exist in the greatest abundance in the iron hornblende, and is disengaged in great quantity in the hot season. The first rain that cools the atmosphere to  $74^{\circ}$  puts a stop to the discharge of the magnetic or electric principle, and to the further progress of the fever. Epidemic fevers in Madras, he states, are preceded by electrical phenomena.

*Contagion.* Some very valuable facts and observations on the importation and propagation of plague and other contagious diseases are contained in the extracts from an unpublished work by Dr. Furguson, Inspector-General of Army Hospitals, which have appeared in the 'Edinburgh Medical and Surgical Journal' for January and July, 1843.

*Hereditary transmission of intermittent fever.* Dr. Brunzlow,§ of Magdeburg, relates the following as an instance of the hereditary transmission of ague. A woman, aged 34, was seized in the second month of pregnancy with tertian ague, which after several weeks was cured by bark. It returned with the quartan type, and lasted to the seventh month, returned a second time in the eighth month, and was not finally cured till in the course of the ninth month. She gave birth to a thin, feeble child, which when some months old, she observed, was still thin and weakly, cried, shook, and had much heat every fourth night. It was cured by frictions of quinine and lard to the epigastrium and in the axillæ and the internal use of quinine. Three attacks only occurred after this treatment was commenced, and the child afterwards became robust.

*Measles, transmission by inoculation.* Dr. M. Von Katona,|| in a very malignant and wide-spread epidemic of measles in the winter of 1841, inoculated 1122 persons, with a drop of fluid from a vesicle, or with a drop of the tears of a patient with measles. It failed in seven per cent. of those on whom it was tried; but in all the rest the disease was produced in a very mild form, and not one of them died. At first a red areola formed round the puncture, but this soon disappeared; on the 7th day fever set in, with the usual prodromi of measles; on the 9th or 10th, the eruption appeared; on the 14th, desquamation commenced, with decrease of the fever and the eruption; and by the 17th, the patients were almost always perfectly well.

\* Medical History of the Expedition to the Niger, &c.; London, 1843.

† *Bulletino delle Scienze Mediche*, Nov. and Dec. 1843, p. 388.

‡ *Provincial Medical and Surgical Journal*, Sept. 3, 1842; from *Madras Medical Journal*.

§ *Bullet. gén. de Thérap.*, 15 and 30 Nov. 1842, p. 390. || *Oesterr. Med. Wochensch.* July 16, 1842.



*Ætiology of diseases of the heart.* Dr. Flügel\* thinks that among the determining causes of cardiac disease, immoderate, long continued, or even only momentary bodily efforts, especially of the muscles of respiration, of such kinds as interfere with the free performance of respiration, have not received the attention their importance deserves. He gives five cases in which the patients referred their cardiac symptoms to muscular efforts, and insists on the importance of these facts in reference to prophylaxis.

*Hemorrhage, meteorology of.* In a paper having this title, Dr. Joslin† proposes to examine among the various causes whose combined influence determines the time when a spontaneous hemorrhage shall occur, whether the condition of the atmosphere has an influence so great as to be discoverable by a careful comparison of medical and meteorological observations. The examination was restricted to cases of hæmoptysis and uterine hemorrhage, occurring in his own practice, in three consecutive years, and those cases only were selected in which the exact hour and day of attack were known.

1. Season and temperature. The greater number of cases occurred in June and September, hæmoptysis taking the lead in the former, and uterine hemorrhage in the latter month. Neither the extreme of heat nor of cold appeared to be among the most influential causes. But by examining the dew point and the difference between it and the temperature, some depression of temperature seemed to be a usual concomitant of hemorrhage. The average depression of the thermometer below the monthly mean was 38, but the fall was greater for hæmoptysis.

2. Hygrometric condition. There did not appear to be any relation between the hygrometric condition and the occurrence of hemorrhage, except in so far as that change of temperature (which is attended by a corresponding diminution of vapour) entails an alteration of hygrometric state.

3. Barometrical condition. The barometric results were more remarkable than the hygrometric or thermometric, and in many respects opposed to generally received opinions. During the 24 hours preceding the attack, the instances in which the barometer was rising were nearly equal to those in which it was falling. This correspondence applied to both sets of cases. Before the uterine hemorrhage the barometer rose 13 times, and fell 14, and the same occurred before hæmoptysis. There was, therefore, a slight tendency to depression, but not such as to justify any general conclusion. The case was different for the days of attack: on these the barometer was generally falling, and in a greater proportion of cases than could be with any probability attributed to accident. Out of 54 cases, it was in 34 falling, at the time of attack, in 18 rising, and in 1 stationary. The proportion of cases in which the barometer fell was almost exactly the same for both classes of hemorrhages; being 17 to 9 for the uterine, and 18 to 9 for the pulmonary. But that this influence of diminished atmospheric pressure was not mechanical, seems proved by the fact that the effect was not at a maximum when the pressure was at a minimum, and the blood-vessels thus in an unusual degree deprived of support; for the barometer, though generally falling, was not *low*, but on an average about one third of one tenth of an inch *above* the mean height for the year. The conclusion from all the barometrical facts was, that at the commencement of the attack of hæmoptysis, or uterine hemorrhage, the barometer is *generally falling*, and from some points *above* the mean.

4. Storms. The observations made on the relations of storms of rain or snow to the occurrence of hemorrhage tend to the conclusion that the atmospheric condition *preceding a storm* is more conducive to hemorrhage than that which succeeds one. This conclusion is confirmed by comparing the three days which precede, with the three which immediately succeed. The proportion of the former

\*Oesterreich. Med. Wochenschr. July 15, 1843. Zur Aetiologie der Herzkrankheiten von Dr. Jos. Flügel.

† Amer. Journal of Medical Sciences, "On the Meteorology of Hemorrhage," by B. F. Joslin, M.D.: New York.

which were stormy, was for both kinds of hemorrhage collectively only, thirty-six and a half per cent., that of the latter fifty-one and a half.

On reviewing all the meteorological circumstances, the mean results, whether barometrical, thermometrical, or hygrometrical, all conspire to point to a time of transition from a fair and *dry* to a more foul and *stormy* period, or at least to a time characterized by great electrical changes, and especially to the development of much free electricity in the upper regions of the atmosphere, by the precipitation, and even crystallization of aqueous vapour.

*Cretinism, causes of.* Dr. Roesch\* having been ordered by the government of Würtemberg to inquire into the causes of cretinism, examined 3000 cretins in different localities where the disease was endemic. The following are the more important of the conclusions at which he arrived. 1. Cretinism is sometimes sporadic, but in certain localities is endemic. 2. It is hereditary, with the ordinary laws and exceptions to which hereditary diseases are subject. 3. The conditions for its development are hereditary predisposition, and the action of certain influences on the parents (such as want, deficient food, unwholesome habitations, excessive labour, and debauchery,) and accidental causes acting on the child, during the period of its physical and intellectual development. 4. These accidental causes are certain atmospheric and geological conditions peculiar to certain localities. Impregnation of the water with gypsum, or lime, or melted snow, appeared to Dr. Roesch to exert no evident influence, for he met with cretins, where the water was quite pure. But humidity of the air, he thought, played an important part. Cretinism is never endemic in plains, or on elevated "plateaux," whilst it is found in valleys and "bas fonds" abounding in moisture. It does not exist in cold countries where sudden variations of temperature are rare. All the localities in which it is endemic agree in being humid, foggy, and exposed to sudden changes of temperature, often very hot in the middle of the day, and cool or even cold in the morning and evening. Goitre constantly accompanies cretinism, is indicative of it, and is developed under the same conditions. These views of Dr. Roesch correspond exactly with those of M. Marchand, published in his inaugural thesis of 1842.†

*Defective expansion of the lungs as a cause of disease.* In the Gulstonian Lectures for 1844,‡ Dr. Barlow, in a very philosophic spirit, elucidates some of the consequences ensuing from defective expansion of the lungs in early youth, and refers more particularly to four classes of cases in which pulmonary obstruction is associated with hypertrophy and dilatation of the right heart, pointing out the effects on the liver and the venous circulation generally, and the subsequent occurrence of anasarca. In the first class of cases to which reference is made, the obstruction to the circulation, in the right side of the heart, is produced simply by defective expansion of the lungs and air-passages, at the period of life when the thoracic organs undergo that development which alters their previously existing relation to the abdominal organs.

He gives, in illustration, the case of a girl, who, when aged 12, suffered from dyspnea, palpitation, enlarged liver, ascites, and anasarca, which, after being relieved from time to time, ultimately proved fatal at the age of 15. The chest was narrow and ill developed, the mammae and genitals were infantile, the liver much enlarged and myriaticated—enormous dilatation of the right auricle and ventricle with some hypertrophy—pulmonary artery *small*—valves healthy—right auriculo-ventricular opening enlarged. The left auricle and ventricle were dilated, but much less so—lungs compressed and exsanguine, but structurally healthy—trachea small, and bronchi compressed. All these consequences are referred simply to defective expansion of the lungs, and consequent increased action of the right heart to overcome the impediment to the discharge of its contents.

\* *Gazette Med. de Strasbourg*. Nov. 1842; and *Bullet. Génér. de Thérapeutique*, 15 et 30 Dec. 1842.

† See also *Beobachtungen u. Bemerkungen über den in Oesterreich häufig vorkom. Cretinismus*. Von Dr. Shausberger, in *Oesterreich. Med. Wochens.* 29 Oct. 1842.

‡ *Medical Gazette*, vol. i, 1843-4, pp. 705-53-55.

In a second class of cases similar results ensue from defective expansion of the lungs, arising from mechanical pressure exerted on them or the air-passages, e.g. in deformity of the spine or chest, or pleurisy and consequent adhesions; unless the opposite lung take on a compensating action, when, in consequence of its increased activity, there is great danger of tubercular deposition. His third class includes a set of cases the true nature of which he thinks has hitherto escaped the notice of pathologists, in which the obstruction to the circulation on the right side of the heart is the result of *pericarditis acting medietely through the impediments which it offers to the respiratory movements*. The state of respiration so characteristic of pericarditis cannot, he argues, continue long in a person whose growth is not yet completed, without offering great obstruction to the development of the lungs, and thus inducing important changes in the right side of the heart, and the evils thence resulting. The consequences of pericarditis are thus very different in the adult, from those ensuing in a person whose frame is not yet fully developed. Dr. Barlow denies that hypertrophy of the heart is a necessary consequence of pericardial adhesion, and adduces a remarkable case illustrative of this, in which a complete ring of ossific matter (deposited in the false membrane, forming the medium of adhesion between the two surfaces of the pericardium), surrounded the base of the heart. The man had been the subject of rheumatic pericarditis two years before. The heart itself was not larger than natural. The true cause of hypertrophy and dilatation, with pericardial adhesions, is the impediment to the circulation through the lungs, and not impeded action of the heart from its being shackled by the pericardial adhesions. In connexion with this subject, he also alludes to the arrest of the heart's growth and inability to carry on the circulation from this cause, as an occasional consequence of pericarditis in young people, and cites a remarkable case of atrophy of the heart.

In the fourth set of cases the defective expansion of the lungs is the consequence of obstruction in the left heart with narrowing of the mitral orifice.

*Contagious cells, Inoculation by means of.* Dr. Klencke\* in the 'Arch. für die gesammte Med.' states that he has succeeded in communicating to healthy animals—carcinoma, tubercle, melanosis, condylomata, warts, ozæna, and coryza—charbon (malignant pustule), and hydrophobia—by inoculating with the cells of these several diseases, and mentions as important practical facts, that the cells of recent coryza are readily destroyed by the action of chloride of lime, but if the disease becomes chronic, the cells disappear and are replaced by the confervæ of ozæna. The cells of charbon are so contagious that it is dangerous to inoculate with them; after having subjected them to boiling water, and kept them in lime for fifteen days, he was able to inoculate a small goat. The cells were obtained from a yellow fluid that trickled from the pustule. He has met with the hydrophobic cells in the excised cicatrix of a bite which had given reason to fear hydrophobia, and in the foam from the mucous membrane of the cheek and the salivary glands. These cells are dissolved or rendered inert by boiling water, the mineral acids and chlorine water.

The lymph of variola, and the acute exanthemata is inoculable in proportion as it abounds in contagious cells.

[These statements are corroborated by some facts recorded by previous writers, Gooch, Mayo, and Langenbeck.]

*Phthisis, Influence of employment on.* From an elaborate and valuable paper by Dr. Guy† on the influence of employment in the production of phthisis, the most important conclusions to be drawn are,—that the ratio of cases of pulmonary phthisis to those of all other diseases is highest, both in the male and female sex, among those following in-door employments, and in the case of men, varies inversely with the amount of exertion, being highest where there is least exertion. Neither a constrained posture, nor exposure to a high temperature, nor a moist atmosphere, appears to have any marked influence in inducing con-

\* Prov. Med. and Surg. Journal, No. 156.

† Journal of the Statistical Society.

sumption. The ratio of pulmonary phthisis to all other diseases is highest among men exposed to the inhalation of dust, and high among the intemperate. The age at which the disease occurs is early in proportion as the occupation is such as to present a high ratio of cases. The practical inference deducible from these observations is, that the predisposed to phthisis should choose out-door occupations, and among in-door employments, those entailing most exercise, and that they of all others should avoid intemperance and the inhalation of dust. Dr. Jackson,\* however, in his analysis of 604 dissections of persons dying of all diseases, in the course of ten years, in Boston, (U. S.) says that intemperance certainly does not appear to develop phthisis, and that of 35 drunkards, 26 presented no trace of tubercle.

*Calculus diseases.* Dr. J. Jackson, of Calcutta,† in a letter to Mr. Crosse, of Norwich, states that the assertion that calculus diseases do not exist in tropical climates is far from the truth, for that in the midland provinces and in upper India there are few districts where these diseases are not prevalent among the lower classes, who are badly fed, and live on an unleavened bread, similar to the Norfolk dumpling. Few cases, however, are met with among the aged.

*Scrofula.* M. Lugol's treatise on the Causes of Scrofula‡ can scarcely be said to be correctly designated, inasmuch as he appears to consider hereditary predisposition as the *sole* cause, all others merely influencing its development, form, frequency, and mortality. A full abstract of this work will be found in a previous Number of this Journal.

*Acute rheumatism.* A somewhat dubious case of the transmission of acute rheumatism by a mother to her child, by suckling, is recorded by Dr. Gottfried Crusz.§

*Fear, its influence on public health.* Dr. Zimmerman|| has given a very interesting account of the influence exerted on the public health by the great fire at Hamburg in 1842. He notices particularly the fact that many bedridden invalids rose and displayed supernatural force and energy, some of whom remained permanently cured. Diarrhoea, mania, and apoplexy were the principal diseases observed. There were 43 deaths, and 120 wounded. The monthly mortality was, however, below the average.

*Climate, meteorology, &c.* Numerous treatises have appeared on the influence of climate, &c. on the production and spread of disease, and the mortality attending it. Among others the following may be mentioned as containing much valuable information. Mr. Noble's\*\* essay, on the Influence of Manufactures upon Public Health; the Reports of Mr. Chadwick†† and the Registrar-General,‡‡ and of the Commissioners appointed to take the census of Ireland in 1841;§§ the treatise of M. Melier on the Influence of the Price of Provisions on general Disease and Mortality;||| that of Dr. Guy, on the Influence of the Seasons and weather on Sickness and Mortality;\*\*\* Dr. Forry's treatise on Meteorology, &c.,††† and his analysis of the American army reports;‡‡‡ Dr. Foltz's essay on the Diseases

\* New England Quarterly Journal of Medicine and Surgery, July, 1842.

† Provincial Medical and Surgical Journal, May 22, 1844.

‡ Recherches et Observations sur les Causes des Maladies Scrofulenses, par J. G. A. Lugol; Paris, 1844.

§ Oesterreich. Med. Wochens. 15 Oct. 1842.

|| Oppenheim's Zeitschrift, Dec. 1843, p. 457.

\*\* Facts and Observations, &c., by Daniel Noble; London, 8vo, pp. 88.

†† Report on the Sanitary Condition of the Labouring Population of Great Britain, &c., by Edwin Chadwick, Esq.; London, 1843, pp. 380.

‡‡ Fourth and Fifth Annual Reports of the Registrar-general.

§§ Report of the Commissioners appointed to take the census of Ireland for the year 1841; Dublin, 1843, folio: containing Mr. Wilde's 'Report on the Tables of Death,' founded on the mortality of Ireland for the ten years ending 6th June, 1841, amounting to about 1,187,374 persons.

|| Etudes sur les Substances envisagées dans leurs rapports avec les Maladies et la Mortalité. Par M. Melier, in Mém. de l'Académie Roy. de Méd., t. x.

\*\*\* Quarterly Journal of the Statistical Society, on the influence of the seasons and weather on sickness and mortality, by Dr. Guy; and Medical Gazette, vol. xxxii.

†† Meteorology, &c. by Samuel Forry, M.D. 1843.

‡‡ The Climate of the United States, and its endemic influences; based chiefly on the records of the Medical Department and Adjutant-general's office. By Samuel Forry, M.D. New York. Langley, 1842. 8vo, pp. 330.

&c. of Minorca;\* and that of Mr. Power, on the climate of Van Diemen's Land.

## 2. GENERAL DOCTRINES OF DISEASE.

*Systematic treatises on general pathology.* Dr. Schultz† has issued the first part of a systematic treatise on general pathology, founded chiefly on his own microscopic investigations in anatomy and physiology, and the peculiar views to which these have led him. An exposition of these views has already been given in this Journal,§ from which some notion may be gathered of the pathological doctrines propounded in the present treatise, which may be considered as a systematic attempt to apply to pathology the various important revelations of recent microscopic anatomico-physiological researches. The character of the work, however, precludes any abstract of it being given in a Report like the present. Dr. C. J. B. Williams's *Principles of Medicine*|| will be found to contain an exceedingly valuable exposition of the general principles, not only of pathology, but also of general therapeutics. The work is alike conceived and executed in a far more philosophical spirit than anything which has issued from the British press for many years, with the exception, perhaps, of the invaluable *Outlines* of Professor Alison; from the latter, however, the principles of Dr. Williams differ, in containing as an appendix to each section, the general principles of therapeutics, which are also discussed throughout the work in immediate connexion with the pathological doctrines whence they are deduced. Viewing disease as consisting in changes of function, or structure, generally of a more or less compound character, involving several elementary functions, or structures, he proceeds, as the anatomist or physiologist would do, to analyse and separate these derangements of structure and function, into their constituent parts, before contemplating them in combination. He treats, therefore, of general pathology by the synthetic method, commencing with the *primary* elements of function in its diseased state—viz. irritability, tonicity, sensibility, voluntary power, secretion, &c. Having considered the morbid changes in the vital properties of the elementary solids, he examines the morbid changes of the blood, and then passes to the consideration of the secondary or *proximate* elements of disease, consisting of two or more primary elements, commencing with those which relate to the circulation of the blood—*anæmia*, *hyperæmia*, inflammation, and its results. Structural diseases, or those of nutrition, are then discussed, and the chief forms of alteration in the nutritive processes traced, in which these diseases originate. The concluding chapters are devoted to nosology, semeiology, diagnosis, &c.

*Periodicity of disease.* Dr. Laycock adopts the term *proleptics* (from *προλαμβάνω*, anticipo,) to designate the science of the laws of recurrence of phenomena, and has given his views of those laws in several "contributions to vital proleptics," in which he endeavours to exhibit the laws of vital periodicity, illustrating them by pathological phenomena, and showing how they may be applied to medicine. The causes of vital periodic movements he considers to be either *esoteric*, or *exoteric*. Schweig's†† researches on the same subject are intended to illustrate the periodic movements exhibited in the excretion of uric acid, in the uterine functions, in the number of deaths from various diseases, and in the recurrence of epileptic attacks. He terms the periods within which the changes which the body is continually undergoing in its composition take place, "tropical periods,"

\* The Endemic Influence of Evil Government, Illustrated in a view of the climate, topography, and diseases of the island of Minorca, &c. By J. M. Folz, M.D. Surgeon in the United States Navy.

† Observations on the Climate of Van Diemen's Land, by W. J. Power.

‡ Lehrbuch des allgemein. Krankheitslehre, von Dr. C. H. Schultz, 1ter Thiel; Berlin, 1844.

§ July, 1843.

|| Principles of Medicine, comprising General Pathology and Therapeutics, by C. J. B. Williams, M.D.; London, 1843.

¶ Lancet, 1843-3-4.

†† Untersuchungen über periodischen Vorgänge, &c. von G. Schweig; Carlsruhe, 1843.

(*regimen*, nutritio,) and adopts the quantity of uric acid excreted, as the exponent of the intensity of those changes. Instructions for the observation of periodic phenomena, and for obtaining uniformity of data have been published by Quetelet\* and Schwann.† M. Melier‡ directs attention to the importance of recognising certain forms of disease in which he maintains the phenomena are intermittent; but with short intervals, and instances certain convulsive affections of infants, some cases of eclampsia, uterine pains, hemorrhages, and fluxes, in which the phenomena of intermittence may be observed, and which cede to the influence of bark. M. Duparcques also confirms the observations of Melier, and cites similar cases in support of these views. He relates among others a case in which paroxysms resembling those of ague occurred four times in the twenty-four hours, with almost perfect intermissions, and which were cured by sulphate of quinine—two cases of convulsions in infants—and hiccup in old people. He suggests that certain mental affections belong to this category, and gives a case of acute intermittent delirium, with short intervals, cured by quinine.

*Antagonism of disease,—phthisis and ague.* Numerous and warm discussions have taken place in the Royal Academy of Medicine, and other scientific societies of France, on a statement made with considerable confidence, by M. Boudin, in his 'Géographie Médicale,' to the effect that a real antagonism exists between phthisis and ague, so that in any district where the one is a frequent disease, the other is rare. To this opinion he had been led by his observations on the diseases and medical topography of Algiers, where, he says, the "rarity of phthisis is not to be considered as a general fact, but as true only with reference to the marshy part of the coast where intermittents and other diseases from malaria prevailed;" hence he infers that the phthisical and those disposed to phthisis should reside where the temperature is mild or warm, and the soil marshy, though not otherwise very unhealthy. In support of his opinion he cites Hyères, long known to be favorable to the phthisical, though liable to malarious diseases,—Pisa, Plaisance, Parma, and Rome. He refers also to the statement of Hennen, with reference to the rarity of phthisis and frequency of intermittent diseases in the British isles of the Mediterranean, and to numerous other writers whose evidence is to the same effect. M. Boudet, when on the point of proceeding to Algeria, was requested by the French Academy to endeavour "To determine whether phthisis is a rare disease in Algeria, and whether it is true that it is much more rare in the marshy districts than in other localities."¶ This subject of inquiry the academy recommended in consequence of the above statements of M. Boudin and those of M. Casimir Broussais, who, in a previous memoir, read to the Academy, asserted that he had ascertained from the official army reports, that the proportion of deaths from phthisis in Algeria, to those from other diseases, was 1:102, while in the army in France the proportion is 1:5. The reporters on this memoir, however, with much reason, doubt whether this rarity of phthisis, as stated by Broussais, is not more apparent than real, and may not be explained by the great mortality of the army from other causes. From various sources, a mass of evidence has been collected, with a view to determine the truth of Boudin's theory, in favour of which may be cited the evidence of M. Nepple of Lyons,\*\* who states that the rarity of phthisis in marshy districts, "has always appeared to him in direct relation to the elements of 'impaludation,'" and to diminish with them. "So that if in the districts situated in the centre of a swampy country we do not meet with a single case of indigenous phthisis, we find that the number of cases increases in proportion as we recede from that district. Hence, at a certain point we find tubercles and ague associated; but, then the febrile endemic is slight." The evidence of Pacord, of Bourg (en Bresse) and of others is to the same effect.††

\* Bulletin de l'Acad. Roy. de Bruxelles, No. 1, t. ix.

† Idem, Nos. i and vii, t. ix.

‡ Bulletin de l'Acad. Roy. de Méd., 15 Mai, 1843. Rapport by F. Dubois, &c.

§ Gaz. Méd. de Paris, 24 Dec. 1842.

¶ Bullet. de l'Acad. Roy. de Méd. No. xvii, 15 Mai, 1843.

\*\* Gazette des Hôpitaux, Sept. 2, 1843.

†† Idem, loc. cit.

But the evidence adduced by other observers is directly opposed to the theory of Boudin; and the results of Dr. Genest's examination of the reports of Major Tulloch and Mr. Wilson on the sickness and mortality of the British army at home and abroad seem decisive against the theory, as will appear from the following table, showing the relative number of cases of phthisis and intermittent fevers admitted into hospital.\*

	Intermittent Fever.			Phthisis.	
		per 1000			per 1000
United Kingdom	3			6.5	
Gibraltar	5	"		5.6	"
Malta	7.5	"		6	"
Ionian Isles	128	"		5	"
Canada	78	"		5.6	"
Nova Scotia	0.8	"		7	"
Bermudas	2.5	"		8.8	"
Western America	280	"		9.5	"
Jamaica	85	"		13	"†

*Purulent infection, Theory of.* M. Sedillot,‡ after pointing out the insufficiency of the various theories advanced to explain the phenomena of purulent infection or metastatic abscesses, endeavours to show that as long as pus is of the healthy kind, it exerts no toxic influence on the economy, and proceeds to inquire what are the alterations of quality necessary, to give rise to visceral abscesses and adynamic fever. Changes from simple exposure to the air are not sufficient, but it is not necessary that the pus should be sanious or fetid. The principal causes of the phenomena of purulent infection he believes to be the gangrenous or ulcerative liquefaction (*fonte ulcéreuse*) of parts in a state of ulceration, a condition which he has always found to exist, and which is occasioned by the pressure of pus on the surrounding tissues and their consequent death from strangulation, which precedes the absorption of their detritus. Dr. Budd's valuable lectures on suppuration of the liver contain many important facts bearing on the same subject.§ He arranges the causes of suppurative inflammation of the liver under three heads: 1st, mechanical violence; 2d, suppurative inflammation of veins—the common cause of disseminated abscess after operation; 3d, ulceration of the intestines, stomach, and gall-bladder, but especially of the large intestine. This he considers the most frequent cause, and adverts to the connexion between dysentery and abscess of the liver as having been long known, but which he thinks more frequent than has been supposed. In thirty-four of fifty-nine cases which he cites, this connexion existed; the same proportion existed in twenty-nine cases given by Annesley; and in fifteen from Louis and Andral. It is chiefly in connexion with the sloughing ulceration of acute dysentery and chronic ulcers that hepatic abscess is seen. A close analogy, Dr. Budd thinks, exists between disseminated abscesses and disseminated masses of cancer, from the absorption of cancer-cells. The experiments of Mr. Betts|| [analogous to those of Dance and Cruveilhier,] are confirmatory of Dr. Budd's views, showing that the injection of mercury and pus by the blood-vessels will produce inflammation and abscess of the tissues and organs, supplied by the capillaries in which these vessels terminate. Pus injected into the mesenteric vein induced abscess of the liver, and when injected into the crural or other systemic veins, abscess of the lungs. Pus-globules and cancer-cells, Mr. Betts states, he has ascertained by admeasurement to be too large to pass the capillaries, where consequently they are arrested and give rise to irritation.

*Tubercle.* The conclusion to which Mr. Addison's researches on tubercle\*\* have led him is "that all secretions take place in the interior of granulated vesicles

\* Gazette Médicale, Sept. 9, 1843.

† Vide also Gazette Méd. de Paris, July 1, 1843. Idem, Aug. 5. Gaz. des Hôpitaux, Nov. 9, 1843. Idem, Aug. 31; and Bulletin de l'Acad. Roy. de Med. Séance, Aug. 29, 1843.

‡ Annales de la Chirurgie, Franc. et Etrangère, t. vii, p. 129.

§ Gulstonian Lectures, by Geo. Budd, M.D.; Med. Gazette, vol. i, 1843, pp. 1, 33, and 63.

|| Medical Gazette, vol. i, 1843-4, p. 312.

\*\* Researches on the Nature of Tubercle, Med. Gazette, Nov. 11, 1842.

or cells, not by transudation from one tube (a blood-vessel,) into another, (a duct,) and consequently that "tubercles" in the lungs, "tubercular infiltrations," "hepatization," and "pus" are not secreted products, but simply the elements of the blood effused by an excessive "vital turgescence," (or inflammatory action,) having their peculiar characters determined by the texture and function of the structures, and the amount of activity of the turgescence. As far as can be determined by the microscope, the substance effused in pneumonia differs not from tubercular matter. Dr. Lebert, however, maintains\* that gray granulations (which he says are tubercular) and tubercles, are proved by the microscope to be no product of inflammation. The constant microscopical elements of tubercle are molecular granules, an inter-globular hyaline substance, and certain corpuscles or globules peculiar to this abnormal product. Neither is tubercle merely a modification of pus. Tubercles of the lung are usually seated in the intervascular cellular tissue, but occasionally in the cells and the minute bronchi. The views of Dr. Schultz† appear in the main to coincide with those of Lebert. He contends against the views of Gluge, Vogel, and others, and says that cells are not essential to tubercle, but occur only in its latter stages, and indicate in fact the formation of pus-globules. M. Briquet‡ relates three cases of tubercular disease, in support of the following propositions. 1. That there are cases in which the tubercular or cancerous diathesis is primary, and in which these heterologous productions are developed on the surface of serous membranes, without having previously existed in the principal viscera. [The two cases which he adduces in support of this proposition which is opposed to the law laid down by Louis, would scarcely be considered satisfactory by that distinguished pathologist, inasmuch as some tubercles in both cases existed in the lungs. But more decisive cases might easily be adduced, for the exceptions to the law of Louis are certainly numerous. Some will be alluded to in the second division of this Report under the head of strumous peritonitis.] M. Requin§ communicated to the Société Méd. de Paris, the case of a young man æt. 17, who died from extensive tubercular disease of the mesenteric glands, the lungs presenting no trace of tubercle. Briquet's third case is an example of extensive encephaloid disease of the peritoneum attended by inflammation of that membrane, and of the pleura, without any disease of the viscera. His 2d proposition is, that inflammation of the serous membranes, gives rise to the exudation of a matter which passes immediately and without transformation, to the state of tubercle or encephaloid granulations. The situation of the deposits, and their connexion with other indications of inflammation, are the chief arguments he adduces in support of this proposition. 3d. The dropsy which ordinarily accompanies inflammation of serous membranes, that is productive of heterologous matters, may be diagnosticated by the peculiarity of its symptoms and progress. [The evidence advanced in support of this proposition, is only sufficient to establish the distinction between general dropsy from visceral disease or venous obstruction, and that which depends on the accumulation of fluid from chronic inflammation.]

M. Rayer|| who has, for many years, been engaged in the study of comparative pathology, has given, in the following among other propositions, the results of his inquiries on tubercular phthisis. 1. In man and other mammifera, the matter of tubercle may be readily distinguished from recent pus by the absence of granular globules. In birds, the characters of tubercular matter are less marked; foreign bodies introduced into the lungs or flesh, do not give rise to the exudation of a white opaque fluid containing granular globules, but to a dry yellowish matter destitute of globules, the physical characters of which, approach to those of tubercles in the mammalia. In reptiles, fishes, and insects, the characters of tubercle are still less distinct. 2. Pus in the mammifera, es-

\* Comptes Rendus, No. x, 1844.

† Lehrbuch, &amp;c.

‡ Archives Gén. de Méd. Oct. 1842.

§ Revue Méd. Sept. 1842.

|| Journal des Connaissances, Médico-Chirurg. Aug. 1, 1842.



pecially in the horse, after long residence in the organs of the body, undergoes a series of transformations, in consequence of which, it sometimes acquires the appearance of tubercular matter. 3. In man and animals the central softening of tubercles never presents pus-globules, and cannot be ascribed to inflammation; the peripheral softening on the contrary, is generally produced by inflammation of the contiguous textures, and is almost always mixed with pus-globules. 4. The cretaceous or calcareous concretions, (principally composed of carbonate and phosphate of lime with animal matter,) observed in the lungs of both man and animals, must not be considered, as they generally have been, as the last modifications of tubercle, for they are often in man, and very often in the horse, the residue of a small deposit of pus. 5. In many animals granulations are developed in the lungs, which are due to worms or glands, and which may be mistaken for tubercles. 6. Phthisis attains its maximum frequency, in the quadrumana and birds brought from warm climates, and is likewise favoured by the change in climate and food of animals coming from cold climes, as in the rein-deer. 7. Phthisis is rare in the domesticated solipeda, and still more so in the carnivora, but many of the latter are attacked. 8. The domestic dog among the carnivora, and the horse among solipeda, are much less liable to tubercle than to cancer, a disease that had been thought by Camper to be alien to these animals. 9. Among the ruminantia, especially in the genus ox, phthisis is often associated with vesicular entozoa, (especially the *ecchinococcus*.) but there is no relation of transformation or succession between the hydatids and tubercles. 10. Fatty degeneration of the liver is ordinarily an indication of phthisis in man, and of obesity in birds. 11. Although the frequency of pneumonia and rarity of phthisis in the domestic dog seems to show that these diseases are independent of each other in their occurrence, nevertheless in the calf, milch-cow, and ass, the deposits of tubercular matter almost always coincide with a chronic progressive pneumonia. 12. Ulcers of the larynx, trachea, and bronchi have not the same import in all animals as in man; in the quadrumana they almost always indicate a general tubercular affection; in the solipeda almost always glanders. 13. In pneumo-thorax, growths of vegetable fungi may be found on the diseased pleura of phthisical persons, in the same way as they are sometimes found in the air-sacs of birds, but in all cases the development of these fungi is a secondary phenomenon.

*Tubercles in the bones.* M. Parise\* describes the appearances presented in a patient in whom tubercles were found in the lungs, spleen, cellular tissue, and the spinal canal, and in the substance of the vertebrae and sacrum. In the latter situations were seen, 1st, an isolated tubercle surrounded by a vascular membrane, and inclosed in an osseous cell, the surrounding cells being healthy: 2, gray semitransparent matter infiltrated in the bony tissue: 3d, purulent infiltration and necrosis. The author concludes that necrosis is the result of distension of the osseous cells from the infiltration of the yellow tubercular matter.

*Carcinoma.* Dr. Hodgkin,† in pursuance of his former investigations, has endeavoured to connect the nucleated carcinomatous cells of Müller, with the production of those compound cysts, which Dr. Hodgkin had formerly described and pointed out, as the type of the carcinomatous group of adventitious structures. Microscopic investigations have confirmed his views, and demonstrated the application to them of the nucleated cell-theory; whilst these investigations are fatal to the theory of cancerous matter being formed in the blood, and eliminated at the spot where the tumours appear. An additional argument is thus afforded in favour of operations, and the importance of removing every cyst rendered more manifest.

*Nervous diseases, Theory of.* Dr. Wilson has advanced an hypothesis; with reference to various diseases affecting the muscular system, and usually termed

\* Archives Gén. de Médecine, 1843, p. 208.

† Medical Gazette, June 24, 1843.

‡ On Spasm, Languor, Palsy, &c. &c. by James A. Wilson, M.D.; London, 1843.

nervous, which induces him to consider general spasmodic as well as paralytic disorders, in the greater number of cases, to be induced by the direct morbid influence of certain agents circulating in the blood, upon the muscular fibre, rather than upon the nervous system.

## II. SPECIAL PATHOLOGY.

1. DISEASES OF THE DIGESTIVE SYSTEM.—*Œsophagus*. An example of greatly dilated *œsophagus* is recorded by Professor Huss, of Stockholm.\* A lady, æt. 43, had for many years regurgitated her food (often six or twelve hours after taking it) unaltered, and been the subject of hysteric spasms. After death, dilatation of the *œsophagus* was observed, commencing one inch below the pharynx, and gradually increasing till, at the cardia, it formed a large sac lying to the left of the stomach, which was small, but there was no obstruction at the cardia, nor any structural alteration of the *œsophagus*, except considerable thinning. Dr. Huss attributes the dilatation to the hysterical spasms. —A case of cancer of the *œsophagus* opening into the right lung, is recorded by Dr. Jackson.†

*Stomach, perforating ulcer of*. Mr. Crisp‡ has related 5 cases of perforation of the stomach, and collected 46 others from different sources; and from a survey of the whole draws the following conclusions. Of 51 cases, 12 were males and 39 females, and the ages of the latter as follows.

Between 15 and 20	.	.	.	21
„ 20 and 25	.	.	.	10
„ 25 and 30	.	.	.	5
„ 30 and 40	.	.	.	1
„ 40 and 50	.	.	.	1
„ 50 and 60	.	.	.	1

Most, if not all, of the females were unmarried, and in 13 the menses were irregular. Perforation from simple ulcer, he states, rarely, if ever, occurs before puberty in females, seldom after the cessation of the menses, and almost invariably in the unmarried. A chlorotic condition of system, he thinks, is the predisposing cause. In the majority of cases the opening was situated in the smaller curvature, and generally midway between the pyloric and cardiac orifices; in one instance only, it was close to the pylorus; in nine, two ulcers were present on opposite surfaces of the stomach, so that when collapsed the diseased parts were in contact. Seven cases are also detailed by Dr. A. Lefevre,§ who has succeeded, on the dead body, in rupturing the stomach by excessive inflation, and states that the openings thus made are of various forms, some *perfectly round*. He believes many of the instances of sudden perforation are caused by the ingestion of indigestible food, and the generation of gas; that the stomach is thus paralysed, and unable either to pass its contents, or expel them by vomiting; that the acrid mass being retained softens the stomach, and thus further disposes to perforation. In a case detailed by Dr. Morici,|| the patient, a male, who was recovering from intermittent fever, and had had no previous gastric symptoms, died suddenly on leaving the water-closet. The stomach was found torn along the middle of its anterior surface to the extent of three fingers' breadth. The only other morbid appearance being a little thickening of the mucous membrane along the edges of the aperture.

*Ileum, perforation of, from without*. A rare case of perforation of the ileum from ulceration of the peritoneum, consequent on chronic peritonitis, is recorded by Dr. A. M. Adams.\*\* The peritoneum was ulcerated in two places over the commencement of the ileum, and one of these ulcers had perforated

\* Gazette Méd. de Paris, Feb. 11, 1843.

† New England Journal of Med. and Surg. Oct. 1842.

‡ Lancet, Aug. 5, 1843.

§ Archives Générale de Méd. Sept.

|| Annali Universali di Medicina, April, 1844.

\*\* London and Edinb. Monthly Journal, Jan. 1844.

the bowel. The corresponding portion of mucous membrane was perfectly healthy.

*Cæcum. Perforation of the appendix vermiformis.* Numerous cases of this kind have been recorded; six by M. Valtz, of Carlsruhe,\* who, comparing these with fourteen from other sources, attempts to lay down rules for the diagnosis of peritonitis from this cause. He finds the accident to be much more common in males than in females; of 20 cases 17 being males. Two cases are given by Dr. Ernst, of Bonn,† in which hard fecal masses were found in the appendix. In a case recorded by Dr. Peebles,‡ a mulberry calculus of very irregular surface, and nearly an inch in diameter, was found impacted in the appendix. The nucleus consisted of organic matter, and to the surface were attached a number of tomato seeds. The composition of the calculus was not ascertained, but from the history it appears to have been lodged in the appendix for twelve years. Mr. Worthington, of Lowestoff,§ relates a similar case, occurring to a boy, æt. 11, who died after three days' illness with symptoms of acute enteritis. The appendix was perforated near the extremity, and further towards the cæcum an oblong calculus, of a gray colour, and three-quarters of an inch long, was found "so beautifully impacted" that no analysis was made. In Mr. Butler's case (of Winchester),|| the patient, a boy, had suffered from symptoms of gastric and biliary derangement, with fever and pain of the right thigh and groin, increased on pressure, with tenderness of abdomen and constipated bowels, and died from peritoneal inflammation. The appendix cæci was enlarged, thickened, and of a dark colour. In its upper half were two circular perforating ulcers, through which had escaped two small bodies of the size of large peas, of a light brown colour, and nodulated surface, and which corresponded with a third body found in the appendix. The intestinal canal and gall-bladder were free from calculi. On analysis, the calculi were found to consist of inspissated mucus, fatty matter, and a small proportion of oxalate of lime. This analysis corresponds to that in Mr. Wickham's case (Lond. Med. Journal, vol. 3,) with the exception that in the latter there was a portion of subphosphate of lime. From this it would appear that the calculi are not of biliary origin, but formed within the appendix, the natural secretion of which is acid.\*\*

*Gall-bladder enormously distended.* Dr. Babington†† has recorded an example of enormously distended gall-bladder, the cyst containing at least three wash-basin basins of fluid.

*Colica pictorum.* A fatal case of this disease is detailed by Mr. Wreford, of Ottery St. Mary,‡‡ The patient died on the sixth day. The colon was found irregularly contracted, and presented several ecchymosed spots. The appendix cæci was in a state of gangrene.

*Spleen.* Signor Verga§§ details the case of a woman, æt. 50, who, having three years previously received a blow on the abdomen from the pole of a carriage, became subject to attacks of abdominal pain, with obstruction of the bowels, from which she ultimately died. In the left iliac fossa was found a tumour, presenting the characteristics of the spleen, surrounded and hidden by numerous adhesions. The spleen was wanting in its natural situation, and the splenic artery obliterated towards the middle of its course, where it terminated in a point. Cases of spontaneous bursting of the spleen are recorded by Dr. Alle|| and Dr. Neill,\*\* and an instructive case of chronic enlargement by Dr. Davis.†††

\* Archiv. für die gesam. Med. No. iii, t. iv, 1843.

† American Journal of Med. Sciences, Jan. 1843.

‡ Dublin Medical Press, April 5th, 1843, from Provincial Medical and Surgical Journal.

§ Observations on this subject will also be found in the following papers: Durchbohrung des Wurmfortsatzes, von Dr. Mohr, in Casper's Wochenschr. No. xlii, 1849, and Mai 20, 1843, and in Hufeland's Journal for March 1843, by Dr. Binger.

|| Prov. Med. and Surg. Journal, July 16, 1842.

§§ Oesterreich. Med. Wochenschr. Dec. 17, 1842.

\*\*\* American Journal of Medical Sciences, Oct. 1842.

† Schmidt's Jahrbücher, No. iii, 1844, p. 283.

§ Prov. Med. and Surg. Journ., April 8, 1843.

|| Dublin Medical Press, April 5th, 1843, from Provincial Medical and Surgical Journal.

†† Guy's Hospital Reports, vol. vii.

††† Gazzetta Medica di Milano.

††† Ibid.

**2 DISEASES OF THE CIRCULATORY SYSTEM.—Heart. Carditis.** A remarkable case of partial carditis, terminating in abscess and fistulous communication with the pericardium, is detailed by M. Gintrac, of Bordeaux.\* A man, 68 years of age, had for one year been subject to palpitations, which, after a violent fit of passion, became much more severe, and were attended by orthopnoea and anasarca of the lower extremities. When he entered the hospital the heart's action was violent and irregular, and heard over a large extent of surface, but no preternatural sound could be detected, perhaps owing to the loud sonorous ronchi which accompanied the respiration. The pulse was small and frequent, the skin cold, and the countenance expressive of great anxiety. The pericardium was found surrounded by a thick layer of fat, and contained a turbid reddish fluid, resembling a mixture of pus and bloody serum; the serous membrane was slightly reddened. The heart was large, and its anterior surface covered by a layer of concrete pus; over the left ventricle the serous membrane was opaque and easily detached, and at this spot an oval aperture was seen passing from above downwards. The inferior portion of the cavity of the left ventricle was separated from the upper by a thick unorganized layer passing from one side to the other, and forming a sort of septum, beneath which was a collection of thick purulent fluid of the colour of wine lees, in which were masses of a thick solid substance resembling altered clots of blood. The muscular substance corresponding to this abscess, was soft and of a grayish colour; anteriorly the muscular fibres were infiltrated with pus, and from this point a fistulous canal was traced upwards, and found to communicate with the external aperture already described. The membranous septum separating the inferior from the superior portion of the ventricle, appeared to have completely prevented the blood from mixing with the contents of the abscess, and from escaping by the fistulous opening into the pericardium, notwithstanding the forcible action of the heart. —Dr. Dubini also gives the following case.† A woman was admitted into hospital after four days' illness, with pyrexia, dyspnoea, weight in the precordial region, double bruit, rough and superficial, extending along the course of the aorta, and the beat of the heart not free. Subsequently, there was feebleness of the heart's sound and absence of pulse. The muscular substance of the heart was of a yellow colour, and infiltrated with pus; the aortic valves insufficient, and the apex of the heart bound down by adhesions to the pericardium. A similar case is referred to, as occurring four days later in the same hospital, with more advanced purulent infiltration.

*Endocarditis confined to the right side.* Dr. Burci, of Florence,‡ details a case of extensive bronchitis, accompanied with rheumatic pains, and presenting after death evidence of endocarditis, confined to the right auricle, which was filled with liquid blood, mixed with abundant albuminous flocculi. The endocardium was of a florid vermilion colour, tumid and undulated. Layers of dense false membrane covered those parts of the endocardium which were reddest, and beneath which it was thickened, opaque, and readily torn. No other morbid appearance existed, except that the heart was large, flaccid, and soft. Dr. Graves§ found the valves of the pulmonary artery (of which there were but two) studded with recent lymph, in a man who died in 26 hours after a sudden aggravation of symptoms occurring in the course of pneumonia of the right lung.

*True organised polypus of the left auricle.* The following almost unique case is described by M. Puisaye.|| A young man, æt. 19, who from eight years of age, had been the subject of cardiac symptoms, but had never suffered from rheumatism or any acute affection, complained of an almost continued sense of suffocation. There was violent impulse of the heart felt over a great extent of surface, with precordial dulness. The first sound was accompanied by a loud harsh blowing, having its maximum intensity at the apex of the heart,

\* Bulletin de l'Acad. Roy. de Méd. April 11, 1843.

† Gazzetta Medica di Milano, Jan. 1844.

‡ Ib. Oct. 14, 1843.

§ Dublin Journal of Medical Science, Jan. 1843, p. 398.

|| Gazette Médicale de Paris, April 29, 1843.

and which was lost on approaching the aorta; pulse 92, small, irregular. Diarrhœa and gastric disturbance, succeeded by hæmoptysis, were its precursors of death. General hypertrophy and dilatation of the heart were discovered, and the left auricle was distended by a red tumour, having, at first sight, the appearance of a clot of blood, but which on examination proved to be a lobulated fungoid tumour of the consistence of jelly. It distended the auricle and passed through the mitral valve into the ventricle. Its attachment was to the auricle near the foramen butale, around which the lining membrane was puckered up, in folds, which passed into the tumour, and formed its pedicle, the attachments of which were so firm as to admit of the whole organ being suspended by the tumour. The base of the tumour was of cartilaginous hardness, but the body consisted of a number of soft lobules, attached like grapes to the central stalk.

*Needles in the parietes of the heart.* Dr. Sklarsky,\* a Russian physician, relates a case of aneurism of the aorta occurring in the person of a woman, æt. 50, and proving fatal by rupture into the pericardium. On examination, a sewing-needle one inch long, was found so firmly imbedded in the substance of the right auricle, and so corroded that it broke into several pieces on attempting to extract it. Dr. Sklarsky supposes that the needle having been swallowed, stuck in the œsophagus, then passed into the aorta, and gave rise to the aneurism, whence by the movements of the heart, it was thrust into the auricle. In the following case recorded by Dr. Leaming,† the progress of the needle appears to have been traceable by the symptoms. A young woman, when stooping over a table, ran a needle into the right breast; a month subsequently she was suddenly seized with pleuritis, after stooping to pick something from the floor. Five months after this, she had pneumonia, with bronchitis of the right lung, and within another month spasms of the diaphragm, which were succeeded by obstinate vomiting and subsequently by pain about the heart and pericarditis. The needle was found after death in the heart, passing from the back, through the right ventricle into the left.

*Heart, aneurisms of.* In a lengthy paper on this subject,‡ Dr. Craigie has collected from various sources, twenty cases of aneurism of the heart. He calls attention to the dilated recesses or pouches between the columnæ carnes, near the apex of the heart, which are not unfrequently seen in dilatation of the left ventricle, and in some cases of hypertrophy, and which are usually filled with adherent coagula, as though the blood had been, for some time, out of the current of the circulation. These dilated recesses, he thinks, must be regarded as incipient aneurismal dilatations. They are frequently associated with attenuation of the apex of the heart. He details a well-marked case of partial aneurism of the heart, that fell under his own observation, remarkable from the situation of the dilatation and destruction of parts, being at the base of the septum cordis. In the septum cordis in the space between the right lacinia of the mitral valve, and two of the semilunar valves, was a large oval aperture, leading into a cavity of a spherical form, sufficiently large to admit and contain a good sized walnut. The walls of this cavity formed a projecting tumour into the right ventricle, the dimensions of which, at its base were thus considerably diminished. The margin of the tumour or cavity was distinct and sharp, forming a sort of collar to the tumour, as well as the aperture of communication between the cavity of the ventricle, and that of the sac, which was filled, not with solid lamellar adherent coagula, but with semifluid, grumous blood. The walls, more particularly of the convexity protruding into the right ventricle, were composed chiefly of *fibrous bands*.

Mr. Hodgson§ of Birmingham, has also related a case in which there was great distension of the apex of the left ventricle, so as to form a pouch nearly as large

\* Oesterreich. Med. Wochen. 1843, p. 464.

† Philadelphia Medical Examiner.

‡ Observations and cases illustrating the nature of false consecutive aneurisms of the heart, by D. Craigie, M.D. Edinburgh Medical and Surgical Journal, April, 1843, p. 357.

§ Provincial Medical and Surgical Journal, Dec. 9, 1843.

as the natural cavity, the sac was filled with coagula and layers of fibrin, as in ordinary aneurism. The parietes of the heart at the diseased part, were so attenuated, that little or no muscular structure could be seen. Mr. Hodgson thinks this is the most frequent seat of the disease, and that, imperfect nourishment—conversion into tendinous substance—and the deposition of tubercular matter, are the chief causes.

*Heart, tubercles of.* Dr. Kerst\* records the case of a young man, æt. 21, who died much emaciated, but without any symptoms exciting suspicion of cardiac disease. Tubercles were found in the upper part of the left lung and mediastina, the heart of usual size, was throughout adherent to the pericardium, between the two surfaces of which were large masses of tubercle; two large tubercles existed in the muscular tissue, all in a state of softening, and yellow softening of the outer wall of the left ventricle.

*Communication between the right and left side of the heart without cyanosis.* In one case of this kind, given by Professor Huss of Stockholm,† a communication existed between the pulmonary artery and the aorta, large enough to admit the ring finger. Palpitation had been the only cardiac symptom. In another instance recorded by Dr. Mayo,‡ the patient, a woman æt. 57, had been the subject of chronic bronchitis, accompanied by sudden accesses of dyspnea, small quick pulse, increased cardiac impulse, and dullness with a loud systolic bruit at the apex. The foramen ovale was open to the extent of one inch and a quarter.

*Heart, varix of.* Dr. Albers§ gives two cases of sudden death from the rupture of greatly distended coronary veins, the patients having been the subjects of asthmatic symptoms. Such cases he has found associated not with true hypertrophy of the heart, but with either a normal or thinned condition of its walls and the deposition of much fatty matter.

*Diseases of the orifices and valves.* By the careful examination of a large number of cases, Dr. N. Chevers|| has endeavoured to ascertain what are the abnormal conditions of the orifices and valves which are either unimportant in the production of morbid symptoms, or are the results of the means adopted by nature to limit the extension of disease, and adapt the diseased heart to its altered circumstances.

*Obliterated and contracted aorta.* Dr. J. Hamernik¶ has detailed at great length a case in which the aorta was completely obliterated immediately after giving off the left subclavian. The patient had, some years before his death, been squeezed by a waggon, and presented during life, a number of pulsating tumours along the back, consisting of a varicose and greatly enlarged condition of the branches of the arteriæ transversalis colli, scapulæ and subcapularis. The internal mammary arteries were also found, after death, greatly dilated, and the left subclavian at its origin six and a half lines in diameter. A similar case is given by Mr. Muriel,\*\* in which the aorta near its junction with the ductus arteriosus was constricted almost to obliteration, and the superior intercostals much dilated.

*Vena Azygos, rupture of. Sudden death.* Dr. J. Flögel†† relates the case of a soldier who on parade fell suddenly from his horse, and died instantly. With the exception of the liver, all the organs were sound. But in the posterior mediastinum four pounds of black loosely-coagulated blood were found, which had escaped from a large rent in the vena azygos, which was enlarged throughout.

**3. DISEASES OF THE RESPIRATORY ORGANS. *Larynx, Trachea, &c.*** Dr. Stokes‡‡ has related a case of fatal chronic disease of the larynx, without pulmonary disease, or the usual symptoms of mechanical obstruction to the respira-

\* Brit. and For. Med. Rev. Oct. 1843, p. 385.

† Gazette Méd. de Paris, Feb. 11, 1843.

‡ Schmidt's Jahrbücher, No. 4, 1844, p. 37.

¶ Oesterreich Med. Wochen. March 4, 1843.

|| Oesterreich Wochenh. No. xi, 1844.

¶ Waarnemingen in het Gebied der Path. in Utred, 1840.

† Lon. Med. Gazette, 1843-4, vol. i. p. 613.

‡ Guy's Hospital Reports, vol. vii.

\*\* Guy's Hospital Reports, vol. vii.

†† Dub. Journ. of Med. Science, March, 1844.

tion. The disease was singularly localized, occupying the glottis alone, the orifice of which was completely closed by warty excrescences growing from the edge. Two examples of polypoid growths in the trachea have been recorded. In one, detailed by Mr. Stallard,\* death occurred after a severe paroxysm of coughing, lasting an hour. A loose polypus of the size of an almond was found in the trachea, and the root of the pedicle was attached to the mucous membrane, just below the cricoid cartilage. The woman had, for some time, been subject to cough and asthmatical symptoms. In the second case, M. Ehrmann,† having ascertained the existence of a fibro-cellular tumour engaged in the rima glottidis, had recourse to tracheotomy to save the woman from impending suffocation, and two days subsequently cleft the thyroid cartilage, when the polypous excrescence was exposed, and removed from the inferior ligaments of the larynx, to the whole length of which it was attached.

*Pneumonia.* Dr. Addison‡ thinks that what is called simple pneumonia is not really so uncomplicated an affection as is supposed, but should rather be called a broncho-pneumonia. A truly simple pneumonia does, however, occur, and may be unattended by either cough, expectoration, or pain. He considers the air-cells to be the original seat of pneumonia, and not the interstitial tissue, of which he denies the existence. [In what way, then, does the author suppose the vessels which ramify on the exterior of the air-cells, are connected with the parietes of opposite cells; do they lie in naked apposition with the cells? There is surely, as all analogy would lead us to believe, some connecting tissue, and this, to other observers, at least, the microscope appears to reveal.] The first effects of inflammation are the arrest of the natural secretions of the cells, the effusion of serum into them, (not into the interstitial tissue,) subsequently the swellings of their walls, and thus encroachment on their cavities, and absorption of the serum previously effused. In this state the tissues are brittle and consolidated; in the state of red hepatization. As the inflammation proceeds, the parietes of the cells become more opaque and thickened, the minute blood-vessels are no longer visible, the tissues become soft, and with this loss of cohesion and diminished vascular turgesence, the cells admit of albuminous matter being poured into their cavities. This constitutes the gray hepatization. In cachectic subjects this change is commonly limited to separate lobules. What is called carnification of the lung, Dr. Addison considers to be merely the effect of pressure, sufficient to force out all the contained air. The above may be considered the immediate effects of inflammation. The permanent effects present three forms: 1. The uniform albuminous induration, which is the least frequent, but occasionally occurs as the result of acute pneumonia in healthy constitutions. The effect of this is to transform the parts implicated into a uniform, homogeneous, opaque, or semitransparent mass, in which no trace of the ordinary structure of the lung can be detected. 2. The granular induration, which is caused by the effusion of a less organizable albumen. In this form the lobules, with their still distinct cells, filled with the effused matter, may be distinguished, and present something of the character of a raspberry. This is sometimes called inflammatory tubercle. 3. The gray induration, consisting of a mixture of yellowish, white, and black matter in varying proportions, the density increasing with the darkness of the colour. The albuminous effusion, in this condition of lung, has partially undergone organization and contraction and thus glued together, and hardened the aerial cellular tissue. In proof of these changes being the result of inflammation, and not of tubercular infiltration, Dr. Addison adduces various [and satisfactory] reasons,

*Gangrene of the lung.* [This is by no means of so unfrequent occurrence as some have supposed, and the great interest and importance of the subject, as well as the complete obscurity in which the genesis of some forms of pulmonary

\* London Medical Gazette, 19 May, 1843.

† Guy's Hospital Reports, 3d series, No. ii.

‡ Comptes Rendus, April 1, 1844.

gangrene is involved, will justify a brief notice of those cases which have been recorded.] Dr. Scharlau\* has given a well-marked instance of idiopathic gangrene of the right lung. The patient, a robust man æt. 45, in the course of a slight attack of gastric fever, had cough and fetid breath, which led to a careful examination of the chest. Nothing abnormal could be detected by physical examination, though the character of the expectoration, as well as the insupportable stench of the breath, subsequently rendered the nature of the case clear. Shortly before death there was evidence of pleuritis of the right side. The post-mortem examination revealed a gangrenous cavity in the middle of the right lung, capable of containing two fists, but without any trace of pneumonia or tubercle. The pulmonary tissue, in the immediate vicinity of the gangrenous cavity, was permeable to air. The opposite lung was quite healthy.

In the case related by MM. Richard and Deschordest the only indication of any pulmonary disease was the fetor of the breath, notwithstanding repeated careful examinations. The case, however, subsequently became complicated in a remarkable manner, from the sudden occurrence of peritonitis, having the characters of that arising from perforation of the intestinal canal, and attended by great tympanitis. After death it was discovered that a communication had taken place between a gangrenous cavity in the lung and the peritoneum. The details of the appearance presented by the lung are not given, the reporters dwelling only on the obscurity of the case during life, and its occurrence in a strong healthy young man, aged 21. In one of Mr. Wells's cases,† (occurring in a healthy man, æt. 28,) there appeared reason to believe that the gangrene was consequent on the pressure exercised by enlarged bronchial glands on the root of the lung. A great portion of the upper part of the right lung was hepatized and reddish black, and the centre of the upper lobe converted into a semi-pulpy mass, in which shreds of pulmonary tissue and obliterated vessels were floating. The opposite lung was œdematous and emphysematous, and the bronchial and mediastinal glands much enlarged. In his second case, (a marine of robust habit, æt. 26,) a portion, the size of a walnut, of the lateral surface of the lower lobe of the right lung was in a state of gangrene, the rest of the lobe being hepatized. In this and the former case, communication had taken place with the pleural cavity. The third case (a young man 18 years of age,) was chiefly remarkable for the length of time the fetid expectoration lasted, viz. three weeks. In this instance the lower lobe of the left lung was bound down to the chest by pleuritic adhesions, had passed into a state of complete gangrene, and communicated with the upper part of the pleural cavity, which was filled with a sanious fetid fluid, and by which the upper part of the lung was pressed down to the spine. The opposite lung was healthy. Mr. Heaton's case, that of a woman aged 28, is interesting from the circumstances in which it occurred.§ A poisonous dose of opium had induced partial asphyxia, which was followed by subacute and neglected pneumonia. A gangrenous cavity was found after death occupying the greater portion of the upper and middle lobes of the right lung, the walls of which presented a ragged sloughy character, without any evidence of attempt at limitation from the effusion of solid lymph. [This last case, in some measure, confirms the opinion of Chomel, that when gangrene of the lung succeeds to asphyxiating causes, the congestive stage of pneumonia passes at once into gangrene. The age and generally healthy character of the subjects of the above cases are deserving of consideration. In two other cases that will be referred to in a subsequent part of this Report the subjects were young and healthy. A middle aged, athletic looking man was brought into St. Thomas's Hospital, moribund, in August last, who had been suffering under neglected pneumonia for some weeks. The upper portions of both lungs were

\* Casper's *Wochenschrift*, 18 Feb. 1843.† *Gazette Méd. de Paris*, March 1843, p. 159.‡ Report of Cases treated in the Military Hospital at Malta. *Edinburgh Med. and Surg. Journal*, April 1844.§ *London Medical Gazette*, May 3, 1844.



in a state of gray hepatization, and the greater part of the left upper lobe was a mass of gangrene.]

*Cirrhosis of the lung.* Dr. Law\* has described two cases of this disease, in which the lung was covered with a dense false membrane, and the parenchyma was also very dense. Drs. Stokes and Greene, have met with two other examples.† Dr. S.'s patient had been labouring, for some months, under cough, with dyspnea and hectic. There was dulness over the upper part of both lungs, without decided signs of cavities. The left lung was the more diseased, and this was found diminished in size, and very irregular on the surface, giving to the hand, when passed over it, the impression of numerous hard bodies, but which were the air-vesicles. In Dr. Greene's case the bronchial tubes were enlarged, and resembled phthisical cavities. The symptoms during life were those, of phthisis.

**4. DISEASES OF THE NERVOUS SYSTEM. Brain.** Dr. John Hughes Bennett‡ has recorded a series of cases of cerebral and spinal disease, with a detail of the morbid changes, as they appeared to the eye with and without the microscope. He distinguishes two kinds of softening, an inflammatory and non-inflammatory, the former being characterized by the presence of exudation-corpuscles and granules, and consisting essentially in the formation and development of nucleated cells, in the liquor sanguinis, effused from the vessels, and acting as a blastema. The non-inflammatory softening he considers to be the result of mechanical disintegration of the nervous tissue, either from maceration in serum, hemorrhagic extravasation, putrefaction, or mechanical violence. It differs from the inflammatory softening in not causing any symptoms during life, being, in fact, a post-mortem change. The two forms cannot, however, with certainty be distinguished by the unaided eye; but the fawn-coloured is generally inflammatory, whilst the red usually depends on congestion or extravasated blood. Purulent infiltration was never found to be a cause of white softening. Contraction of one or more limbs is a common symptom of inflammatory softening. In M. Durand Fardel's treatise on Softening of the Brain§ will be found a very complete history of that disease, a full analysis of which has been given in the 31st No. of this Journal. M. Fardel insists on the importance of distinguishing between the acute and chronic forms, both in respect of the symptoms during life and the morbid anatomy. During its acute stage softening of the brain is specially characterized by redness and diminished consistence, without disorganization of the part, and is by far the most frequent in the convolutions. He contends against the views of Abercrombie and Carswell that the essential character of white softening is a gangrenous condition of the part, arising from ossification of the cerebral arteries, with obstructed circulation. He also opposes the doctrine that this condition of the arteries is the main cause of cerebral hemorrhage in the aged. He considers the white softening of authors simply the chronic stage of red softening, a *colourless* condition consequent on subsequent changes, and the general doctrine which he inculcates is, that softening is an inflammation having nothing special in its nature, essentially the same in the young and the old, whether produced by local injuries, or spontaneously developed. He, however, is compelled to admit a certain number of cases, in which, after an indubitably acute attack, white softening has been detected, i. e. he is compelled to allow the existence of a certain number of cases of *primitive* white softening. [Such cases are most frequent in children. Fardel's observations were made on subjects advanced in life; but it is when occurring in children, that a correct explanation of the nature of primitive white softening, is of most importance. This explanation, however, M. Fardel is not prepared to give.] In a memoir by the same author,

\* Dublin Journal of Medical Science, March 1843.

† Idem.

‡ Pathological and Histological Researches on Inflammation of the Nervous Centres, by John Hughes Bennett, M.D. Edinb. 1843. Reprinted from the Edinburgh Medical and Surgical Journal.

§ Traité du Ramollissement du Cerveau, par Max. Durand Fardel, M.D. &c. Paris, 1843.

devoted to the investigation of the changes which the blood undergoes when effused in apoplexy, and the consequent alterations in the surrounding textures, will be found a good summary of the morbid anatomy of apoplectic effusions, and their relations to softening of the brain.\*

*Brain, abscess of.* A case of encysted abscess of the brain is recorded by Mr. Bolton.† It was of the size of a hen's egg, seated in the posterior part of the right hemisphere, and accompanied by softening which implicated the whole of the posterior and part of the middle lobe. The patient presented during life no symptoms of either muscular or sensorial disturbance. The only symptoms referrible to the head were dullness of manner, dull pain, giddiness and irritability of the stomach. Death occurred in a few hours after the sudden appearance of coma.

*Brain, hypertrophy of.* An instructive case of this rather uncommon affection is recorded by Mr. Wells.‡ A seaman, æt. 24, complained on the 4th of March, of headache, giddiness, and some dyspeptic symptoms, which were relieved by blisters and aperients. On the 27th, he had more giddiness, with general debility. April 1, excruciating pain of the head confined to the occiput, led to the employment of calomel and antimony, and shaving of the head. No constitutional symptoms appeared till the 3d, when there were severe fits of pain, occasional insensibility, contracted pupils, pale face, low pulse, and some muscular rigidity of the lower limbs. The man died on the 7th; occasional fits of insensibility and rigidity of the limbs having recurred at intervals. The dura mater and the arachnoid were found healthy. There was considerable hypertrophy and hardening of the right cerebral hemisphere, which was so much enlarged as to thrust the mesial line to the left of the foramen magnum. Much limpid serum was found in the lateral and third ventricles, and the right hemisphere of the cerebellum was distended by serum. The medullary substance was healthy, and the only other morbid appearance was congestion of both kidneys.

*Scirrhus tumour of the brain, without any corresponding symptoms.* M. Velpeau § relates the case of an old man, æt. 66, who entered the hospital complaining of feebleness, pain between the shoulders, and some incontinence of urine. The pain was relieved by cupping and the incontinence of urine was trifling. His habit of onanism, however, was so inveterate and shameless, that it was requisite to put on a strait-waistcoat. He fell into a state of marasmus and died. No trace of disease of the cerebellum was found, but the whole right anterior lobe of the brain was occupied by a scirrhus mass, which also encroached considerably on the left anterior lobe. A bony scale of some considerable size was attached to the falx. With the exception of a little enlargement of the prostate, all the viscera, &c. were healthy. By the side of these facts, what becomes of all our beautiful physiological theories? asks M. Velpeau.

*Intra-cranial phlebitis.* M. Boudet, of La Charité,|| has recorded the following case. A clerk, æt. 27, of strong constitution, after exposure to wet and cold, was seized with shivering and intense cephalalgia. These symptoms were succeeded by pain in the eyes and photophobia, and eight days after he was bled largely without relief. He subsequently complained of pain in the right shoulder and neck, and the least motion of the head gave him great pain; there was also pain over the orbits and œdema of the right conjunctiva. Slight intermittence of the symptoms led to the employment of quinine, but without

\* Archives générale de Médecine, April 1844, Sur la réparation ou cicatrisation des foyers hémorrhagiques du cerveau.

† Lancet, vol. i, 1843-3, p. 676. See also Case of Abscess of the Brain, by Dr. G. Pyemont Smith, Lancet, Dec. 31, 1842; and Observation d'Abscès latents du Cerveau, par M. Goussé, L'Expérience, No. 306, Mai 11, 1843; and Case of Encysted Abscess of the Cerebellum unattended by any diagnostic symptoms, by Dr. Fr. Brown, Provincial Medical and Surgical Journal, Oct. 8, 1842.

‡ Edinburgh Medical and Surgical Journal, April 1844; Report of cases treated in the Malta Naval Hospital.

§ Bullet. Gén. de Thérap. t. xxiv, p. 219.

|| Journal de Connals. Méd. Chlurg. April 1844.

benefit. The pulse became dichrotonous; cupping alone gave any, and that but temporary, relief. Delirium, dilated pupils, with a dry and black tongue preceded death, thirty-one days from the commencement of the illness. In the right middle lateral fossa at the base of the cranium was found a small quantity of yellow viscid pus, without colour; this was within the arachnoid, and covered the inferior portion of the anterior cerebral lobe, the corresponding cortical part of which was slightly softened; with this exception the brain was healthy. The right cavernous sinus was filled with thick glairy pus, and its parietes roughened and unequal; the ophthalmic vein was dilated and filled with pus, and here and there the surrounding cellular tissue was the seat of purulent deposits. The coronary, petrous, and lateral sinuses, as well as the internal and external jugular veins, and the trunk of the brachio-cephalic, and the mastoid and sub-occipital veins were filled with pus. The lungs were the seat of purulent deposits. [Intra-cranial phlebitis appears to have been the origin of the disease, and the pus in the arachnoid had probably escaped from an inappreciable opening.]

*Insanity, Contracted foramen lacerum posterius in.* Dr. Kasloff,\* of Kiew, having for some years directed his attention to the state of the great vessels of the head in cases of insanity, has been induced to conclude that, in all its forms, insanity is most intimately connected with derangement of the circulation within the cranium. In particular he has remarked that the foramen lacerum posterius on one, and sometimes on both sides, is much contracted, so as necessarily to have involved great diminution of the jugular vein, and obstruction to the return of blood. The canalis caroticus did not seem to have undergone any corresponding contraction. But along with the contraction of the foramen lacerum posterius was generally seen enlargement of the foramina transmitting veins from the skull. In every skull of maniac or suicide in the museum at Kiew, Dr. Kasloff found this contracted state of the foramen lacerum posterius. [Dr. Kasloff's observations tend to show that a persistent obstacle to the return of blood from the head exists in insanity—an important fact, if true.]

*Parasites.* The zeal with which microscopical investigations have latterly been pursued has led to the detection of numerous parasites, both animal and vegetable, in various parts of the body. It will, however, be impossible to do more than point out the references to some of the discoveries and observations that have been made in this department of pathology. An interesting paper, giving an account of the various entozoa that have been detected in different parts of the eye, is furnished by Messieurs Nordman and P. Rayer.† *Filaria oculi humani* has been seen in the liquor morgagni, and in the capsule of the crystalline lens; monostomata in the crystalline lens, affected with cataract; distoma in the capsule of the crystalline lens of a child born with lenticular cataract; echinococcus between the crystalline lens and choroid; others in the sub-conjunctival tissue, chiefly cysticerci;‡ confervoid growths in the posterior chamber, removed by paracentesis oculi;§ *filaria papillosa* in the anterior chamber of the eye of a horse.|| Dr. Livois' researches on echinococci\*\* led him to examine 800 acephalocysts, and in no one instance did he fail to detect within them echinococci. He, therefore, concludes that the true hydatid is nothing more than the containing cyst of these parasites; which, instead of being rare, are among the most common. They occupy different situations in the cyst, according to their degree of development, appearing as granulations or gemmules, adherent to the interior of the cyst as long as their head is not protruded; but when fully developed floating loose in the fluid of the sac. They are generally found in both situations, but sometimes only loose, escaping when the sac is opened. The containing cyst increases as the echinococci multiply by reproduction. Prof Klencke's experiments†† lead him to believe that hydatids may be, and probably

\* Zeitsch. für die Gesammt. Med. Jan. 1844.

† Annales d'Oculistique, March 1842.

‡ Oesterreich. Med. Wochens. Jan. 14, 1843.

§ Gazette Méd. Dec. 1843.

† Ann. de la Chir. Franc. et Etr. vol. vii, p. 191.

§ Casper's Wochens. Sept. 10, 1842.

\*\* Recherches sur les Echinocoques. Paris, 1843.

††

are, in every case, developed by contagion as he calls it, or by actual introduction within the body. When he injected them within the veins, or introduced them into the cellular tissue or digestive tubes of dogs, cats, birds, &c., he found that they excited the disease. He also detected them in the milk of the cow. Mr. Drewry Ottley has detailed the history of a case in which the *ecchinococcus* was found in the brain. A new species of intestinal worm has been described by M. Dumeril,\* under the designation of *opisthoma pontieri*. Two examples are recorded of intestinal worms escaping by the umbilicus. One by Dr. Hecking,† in which several lumbrici (spulwürmer) escaped from an abscess over the umbilicus, which closed shortly after. A second by Dr. Siebold,‡ in which a *tænia solium* escaped from the same situation, and in the same way, without the discharge of fecal matter or gas, or any indication of perforation of the intestine. The *fasciola hepatica*, so seldom found in the human subject, has been detected in the vena porta by M. Duval.§ The species of *demodea* (*acarus folliculorum*) described by MM. Simon and Wilson, has been discovered by Mr. Topping in the pustules of a mangy dog.|| Vegetable fungi found in the air-sacs of birds, in the mouths of newly-born children, and in the crusta of porrigio favosa, are considered by M. Rayer\*\* as invariably secondary productions. Dr. Remak†† has succeeded in transmitting porrigio favosa by inoculation with the fungi. M. Mandl‡‡ states that the tartar of the teeth consists of the calcareous carapaces of defunct vibriones, which abound in the buccal mucus. Dr. J. Hughes Bennett§§ found, in recently expectorated sputa of a man in the last stage of phthisis, with pneumothorax, cryptogamic vegetation, consisting of jointed, transparent tubes, giving off several branches, mingled with numerous round or oval globules.

## PRACTICAL MEDICINE AND THERAPEUTICS.

### 1. FEVERS.

*Influenza.* An epidemic catarrhal fever, presenting all the characters of what is usually termed influenza, has prevailed within the period comprised by this Report, in all the New England States, in which its invasion seems to have been almost simultaneous. The duration of the attack was from a day or two, to a week, or fourteen days; but in the majority of cases a critical sweat, attended by free expectoration, occurred on the third day, with disappearance of the fever on the fifth. Debility and vertigo appear to have been the most constant and remarkable symptoms; but according to Dr. Forry,||| who has given an excellent account of the epidemic, it differed in no respect from others of the same kind. Dr. F. states that in nearly all the cases, at first, a more or less deranged state of the chylipoietic viscera existed. The treatment consisted mainly of mild saline purgatives, diaphoretics and occasionally, when the head was affected, leeches to the schneiderian membrane. Dr. Peebles\*\*\* found the *eupatorium perfoliatum* (vulgo "boneset") very useful in relieving the nervous and muscular symptoms of debility. He ascribes to it diaphoretic, expectorant, and aperient virtues. It was observed by Dr. N. S. Davis,††† that all severe cases were relieved, only after free vomiting, and he was led, therefore, to employ calomel and ipecacuanha, which he found more useful than anything

\* Bulletin de l'Acad. Roy. de Méd. 15 et 31 Jan. 1843.

† Berlin Medicin. Zeitung, Oct. 19, 1842.

‡ Med. Zeitung von Preuss. No. xvii, 1843.

§ Gazette des Hôpitaux, Suppl. Dec. 1842.

|| Physiological Journal, 1844.

\*\* Journal des Conn. Méd. Chirurg. Aug. 1, 1842. See also for other cases and observations on that subject, München All. Zeitung, &c. Dec. 18, 1841; All. Med. Centr. Zeitung, 30 Nov. 1842; and Archives Gén. de Méd. June 1842.

†† Berlin Med. Zeitung, Aug. 3.

‡‡ Arch. Gén. de Méd. Sept. 1843.

§§ Lancet, June 1, 1844, from Trans. Roy. Soc. Edinb.

|| New York Journ. of Medicine, July 1843, p. 64.

\*\*\* Amer. Journal of Med. Sciences, April 1844.

††† New York Journal of Medicine, Nov. 1843.

else, and which never failed to bring away copious dark bilious evacuations, which were followed by speedy relief of all the severe symptoms. The only fatal cases he met with were among those who had been bled. Dr. Gilbert\* considered the disease had its seat in the nervous system, but was unconnected with either congestion or inflammation, and was best treated by strychnia.

*Miliary or Sweating Fever.* An epidemic of this disease, so celebrated in former times, but of late rather rare, has, for the space of a year, spread consternation through five provinces of France, la Dordogne, le Lot et Garonne, le Calvados, le Jura, and la Manche. Numerous accounts of the epidemic as it appeared in different parts of France, will be found in the French journals, but the fullest history has been given by M. Borchard in his report to the Royal Society of Medicine of Bordeaux,† and by M. Parrot‡ in a memoir read to the Royal Academy of Paris, on which M. Martin Solon has reported.§ M. Borchard first gives an account of the topography and statistics of La Dordogne, and points out the remarkable fact, that the localities in which marshes and stagnant waters exist, are those in which the disease raged with greatest violence. M. Rayer, in his description of the epidemic of l'Oise in 1821, and in his researches on similar epidemics, has made the same remark. The sweating sickness M. Borchard considers a general disease, depending on a cause which influences immediately and primarily the whole organism, the first shock being felt by the nervous and sanguineous systems, including the blood. All the epidemics of this disease known for a hundred years, have established the fact that the countries invaded have numerous marshes, ponds, rivulets, and forests; and all the historians of the disease have noted the frequent and sudden atmospheric changes, and the disturbances of the natural succession of the seasons. M. Borchard, therefore, concludes that the cause of the disease is an effluvium from stagnant waters, acting under the influence of certain barometric conditions, on localities which, by the vicinity of forests, are sheltered from wind. The epidemic appears to have commenced in La Dordogne in May 1841, and extended south, destroying in Dordogne 797 of 10,805 persons attacked; whilst in the departments of Lot and Garonne only 614 died of 28,307 attacked. Two forms of the disease were generally recognised, a benign and a malignant; but cases which at the onset appeared slight, not unfrequently assumed, suddenly, the malignant form, and proved rapidly fatal. In whatever form it appeared, it was often developed without premonitory symptoms; in other cases severe headache, spontaneous lassitude, and (especially at Perigueux), nausea and vomiting, and pains in the loins announced its approach. Most frequently violent palpitation of the heart and of the cæliac axis, accompanied by severe headaches, attended the onset of the disease; the skin was covered with a general profuse sweat of a very peculiar odour, whilst at the same time, in some instances, it gave to the hand a sensation of burning heat, a sure indication of the nature of the commencing disease. With these symptoms were associated a painful sense of sinking or anxiety at the precordial region, and in some cases violent delirium. About the second or third day, a distressing tingling of the whole surface of the skin occurred, which was followed on the fourth or sixth day by the characteristic eruption. This was, at first, red and apparently papular; but by the microscope could be shown to be vesicular, a character that was discernible the following day by the naked eye. The vesicles, transparent and of the size of millet seeds, appeared at the sides of the neck, on the chest, on the inner surface of the limbs, and sometimes over the whole body. The fluid contained in them had no corrosive property, and when inoculated into other persons produced only a little local irritation. The eruption was discrete, or confluent. On the fourth day it assumed a yellowish tint, and disappeared with more or less desquamation.

\* New York Journal of Medicine, Nov. 1843, p. 435.

† Gazette des Hôpitaux, 4 Oct. 1843.

‡ Bulletin de l'Académie Roy. de Méd. t. viii, 15 Nov. 1842, p. 105.

§ Ibid. p. 1012.

Through the entire course of the disease the gastro-intestinal system was free from disturbance, and in some severe cases the appetite was preserved. The complication with nausea and vomiting observed at Perigueux did not occur elsewhere. The tendency to assume a remittent or intermittent type was very generally remarked, though neither the sweating nor the eruption was affected by the exacerbations. The abnormal appearances revealed post-mortem, were various, but were more frequently seen in the brain and digestive organs than in the respiratory, and consisted chiefly of vascular injection and congestion. In some cases nothing was revealed by the examination. The blood obtained by venesection was generally of a bright rose colour, the serum not separating readily, and the clot having usually the appearance of currant jelly, without any buffy coat, except in some few instances. The disorder and desolation caused by the mortality which attended the epidemic led to the trial of various modes of treatment. In some of the more malignant cases the patients sometimes died the third day, bathed in profuse perspiration; but before the appearance of the eruption. In such cases the expectant treatment was soon found insufficient. Antiphlogistic remedies were sometimes useful, in removing local congestions, but failed to overcome the severe symptoms. Purgatives were of no use till about the eighth day, when bilious symptoms showed themselves. In the milder cases, expectant treatment with cooling diluent drinks answered best. But in all severe cases the testimony is almost unanimous in favour of the great importance and utility of quinine or bark. This, in the words of Parrot, "was the anchor of safety." It was given in moderate doses during the short remissions in the early stage of the disease. [The same bad consequences were observed from heaping the patients with clothes and encouraging the sweating, as were noticed by Sydenham and Caius, who also have made the same distinction between the mild and malignant forms of the disease.] An apparently independent epidemic occurred in the east of France in Haute Saone, in March 1842, where it was attributed mainly to the artificial excessively hot temperature maintained by the inhabitants. In Saligny, D. of Jura, the mortality was great, apparently owing to the neglect of quinine in the early part of the epidemic.

*Fever, Epidemic of Scotland.* A very extensive epidemic of fever has prevailed in Scotland, having many of the characters of yellow fever, and which has been described by several very competent observers. In Dr. Cormack's Treatise will be found a full account of the history of the epidemic and its peculiar features; but the distinctive characters are so well exhibited in Professor Alison's short paper, and his high character as a philosophical observer (especially on this particular subject) is such, that his statement will be taken as the basis of the following account of this new epidemic.

After stating\* that the ordinary fever had been rare, Dr. Alison says that the great majority of cases are essentially different in their symptoms and progress from strictly typhoid cases, and from any form of continued fever that he has seen generally prevalent: 1. In duration, which is uniformly short; some having a crisis on the fifth, a majority on the seventh, and hardly any protracted beyond the ninth day. When death takes place it is early; in every case he has seen or heard of, before the ninth day. 2. None have shown the true febrile eruption, though some have had petechiæ. 3. An unusually large proportion have become yellow, generally on the fifth day. This has been almost uniformly attended with fulness of the hypochondria, dullness on percussion, and tenderness—generally with much vomiting; sometimes of dark green bile, sometimes of the brownish matter like hare soup, so often seen in cases of organic abdominal disease. He has not seen any black vomiting, but the stools have sometimes had the character of melæna. He thinks the bile, in this state, has never disappeared from the stools, and in fatal cases the bile-ducts were per-

\* Scottish and North of England Med. Gazette, Oct. 7, 1843; in London and Edinburgh Medical Journal, March 1844.

vious, and contained (as also the duodenum) an abundance of bile. The liver was enlarged, but not otherwise diseased. Most of the fatal cases have been jaundiced; but many jaundiced patients have done well with little treatment. Most of these have shown the petechial spots, and in one case a blister applied to the epigastrium rose filled with serum quite black. 4. Both in the jaundiced and non-jaundiced cases, there has been much sickness and vomiting, always abating when the critical sweats took place. 5. *Almost every case has relapsed*, the majority on the fourteenth day: the relapses being of shorter duration than the first attack, and seldom attended with jaundice. In all fatal cases there was inflammation to a great extent of the mucous membrane of the bowels. 6. It has abated almost uniformly by critical sweats, preceded frequently by violent rigors. 7. During and after the sweats, there have been severe pains of the limbs, of the character of muscular rheumatism. 8. The mortality has been very small, not more than one in thirty, and chiefly among the old, or where there was obvious complication. 9. *Every pregnant woman has miscarried*. In two the mother died; in one, though the hemorrhage was considerable, the uterus contracted well. In both the fatal cases rapid sinking followed an attack of pain in the side; in one there was pneumonia, and in the other enlarged and softened spleen. The body in this case rapidly putrified, and the blood-globules examined by the microscope, were irregular in form and size. The mode of fatal termination has been like that in other forms of fever, from embarrassment of function and alteration of structure of some particular organ, usually of the brain, with general failure of the circulation.

The great majority of cases required very little treatment. Remedies directed to relieve the symptoms and meet the local complications, generally mitigated the sufferings of the patient, and in some instances diminished or averted the danger. Headache and other uneasy symptoms of the early periods were relieved by bleeding, which, however, neither shortened the disease nor prevented relapses; and some had a slow unsteady convalescence. Leeching, shaving, and sponging the head, with purgatives, gave relief in the early stage, and afterwards an opiate on the third night, and repeated for several nights, was of signal service in palliating the very uneasy sensations of this period. Antimonials and Dover's powder favoured the sweats; leeches, blisters, and calomel and opium relieved the sickness and vomiting. Some with petechiæ recovered rapidly under the use of chlorate of soda: few required large doses of wine.

Does this fever proceed from the same poison as the ordinary typhus, or is it a distinct disease? The one has succeeded the other within narrow limits of time and space in different parts of the town. One man in the infirmary went through both diseases before leaving the ward. The new has differed from other epidemics by the extent and rapidity of its spread in summer time; but in regard to the mode of its extension (by contagion) and the persons liable to be affected, it has differed in nothing from other epidemics. Dr. Henderson remarks,\* that a third, fourth, or fifth relapse sometimes occurred, and he met with instances, of the same persons exhibiting the two forms of fever (the epidemic and typhus) within a very short time, which he considers a proof of their distinctness. He noticed also, enlargement of the spleen, and derangement of the functions of the kidneys; and in fatal cases terminating by convulsions, he detected urea in the blood and in the serum, effused within the cranium. [The same condition of the spleen was noticed by Dr. Graves in the Dublin epidemic of some years back.] Dr. Spillan† has called attention to the resemblance of the present epidemic in all the important features, to that described by Hippocrates as occurring in the island of Thasus off the coast of Thrace, where the same state of the spleen is referred to. (Vide Clifton's edition of Hippocrates on Air, &c. p. 62.)

In Dr. M'Kenzie's account of the Glasgow epidemic, especial reference is made to the peculiar form of ophthalmia which succeeded to this fever; in describ-

\* Edinburgh Medical and Surgical Journal, Jan. 1844.

† London and Edinburgh Monthly Journal, Feb. 1844, p. 176.

ing which he states, that in the greater number of cases all the textures of the eye suffered from inflammation, which therefore, he thinks, may most properly be called *ophthalmitis*. Sometimes, however, the inflammation was confined to one or two textures. It bore most resemblance to rheumatic ophthalmia, or rheumatic iritis; but its closest resemblance was to sympathetic ophthalmia from wounds of the edge of the cornea or sclerótica. His treatment consisted of depletion, mercury, belladonna, and bark.

Dr. Arrott\* has described the disease as it occurred in Dundee, where it was preceded by a gradual decline of the ordinary fever. Black vomiting, he states, was common, and the bile generally found viscid and thick. The post-mortem appearances corresponded remarkably with those observed by the French commission in Gibraltar, in 1828, particularly in reference to the condition of the liver, which Louis considers the anatomical character of yellow fever.

*Fever-Typhoid.* M. de Larroque calls attention† to the admitted occasional absence of all the so-called pathognomonic symptoms of typhoid fever, the rose-coloured lenticular spots, sudamina, diarrhœa, pain in the right iliac fossa, meteorism, and nasal hemorrhage, and therefore to their insufficiency as diagnostic signs. From his own clinical observations he believes himself justified in saying, that the four following phenomena are present from the onset, and place the typhoid nature of the fever beyond doubt: 1. Stupor, which presents various shades and forms, according to the causes, peculiarities, and intensity of the disease. 2. Dilatation of the pupils, which is signally invariable. 3. The pulvulence or brownish coating of the interior of the nostrils. 4. Gurgling in the situation of the cœcum, and termination of the ilium, which may be discovered in all cases if sought for with care. Whenever these four symptoms have been noticed, they will certainly be followed by the other phenomena which generally constitute the disease. M. Amedée Latour‡ also, advances the following propositions, though not unreservedly; 1. That the diagnosis of typhoid fever is not so clear, or easy as represented. 2. That some eruptive fevers, variola amongst others, may commence with an assemblage of symptoms identical with those which constitute typhoid fever. 3. That when the varioloid eruption is developed the typhoid symptoms disappear. 4. That these typhoid symptoms coincide with or complicate a number of different diseases. 5. That the typhoid symptoms, in the commencement of these diseases, have no influence on their development or progress. And lastly, that at this period, they afford no indication for special treatment.

Some general remarks on the distinction between typhus exanthematicus and abdominalis, will be found in Dr. Miguel's paper.§ He considers more active treatment to be required in the latter than in the former. Dr. Bartels|| has detailed three cases in which the appearance of sores on the tongue was regarded as critical in the course of typhus fever (*nervous fever*), no mercury having been given. M. Rayer\*\* has related to the French Academy a well-marked fatal case of typhoid fever occurring in a woman æt. 56, in which the pathognomonic anatomical lesions found after death were equally well marked. A similar case in a woman 63 years of age is given by Dr. Bartlett.†† [In his work on Typhoid Fever, Chomel stated that there was only one authentic case on record of typhoid fever occurring in a person more than fifty years of age; but in 1837, M. Prus read to the Société de Médecine, an example in a woman æt. 78.] Dr. Richter of Dusseldorf,‡‡ relates a case in which *anæmia* was *excreted by the skin* of a patient suffering under typhus fever. Three days before death, when the patient was in a state of stupor, the face and

\* Medical Gazette, 1843, vol. i, p. 226. For further accounts of the epidemic as it appeared in Glasgow, vide Mr. Reid's paper in Lond. Med. Gaz. vol. i, 1843-4, p. 388, and Dr. Smith in Edinb. Med. and Surgical Journal, Jan. 1844.

† Bulletin de l'Acad. Roy. de Méd. t. viii, p. 15.

‡ Bulletin Gén. de Thérap. Dec. 1842.

§ Casper's Wochen. Dec. 17, 1842.

|| Allgem. Med. Centr. Zeitung, 11 and 14 Jan. 1843.

\*\* Bulletin de l'Acad. Roy. de Méd. t. viii, p. 37.

†† Boston Med. and Surg. Journ. Oct. 1, 1842.

‡‡ Oesterreich. Med. Wochens. 1843, p. 467.



hair of the head and beard were observed to be covered with a whitish shining matter like spermaceti. On closer examination, the face was found sprinkled with minute spots of a whitish substance, which on being removed, left the skin with a punctated appearance. The excretion continued till death, after which, the thighs also were found covered with small needle-like crystals. Chemical examination proved that the excreted matter was alkaline and ammoniacal, and contained in addition a whitish yellow substance soluble in ether. [Liebig has shown the presence of ammonia in the air in the vicinity of typhus patients; and Donné and Prout ascertained that the rhomboidal prisms in the urine and fæces consist of phosphate of ammonia and magnesia, but the excretion of ammonia by the skin of typhus patients, is a fact equally new and important.] The essays of Mr. Ross, on Typhus Fever, which have appeared in the 'Lancet,' contain the results of his attempts to apply the doctrines of modern organic chemistry to the elucidation of the pathology and treatment of this disease.\* M. Rayer's observations can only be referred to as containing much that is interesting in reference to the existence of typhoid fever in animals.†

The following papers elucidating the statistics of fever in Great Britain, are worthy of notice, and may be referred to with advantage. Statistical and Pathological Report of Cases of Fever treated in the Royal Infirmary of Edinburgh, in the year ending September 30th, 1842, by Thomas B. Peacock, M.D.‡ On the Statistics of Fever in St. Thomas's Hospital, with reference to treatment, by H. Burton, M.D.§ This Report contains an elaborate analysis of all the fever cases which fell under the author's care during six years. A Paper on the Statistics of Fever in Edinburgh during a series of nine years, with especial reference to the influence of season, by Dr. Knox.|| The highest average number of cases occurred in the following months, and in the following order: December, November, January, March; and the lowest averages were presented by the months of February, August, and May. Some valuable practical observations on the continued fever of the middle and southern parts of Virginia, from 1816 to 1829, have been given by Dr. J. P. Mettauer.\*\* A systematic Treatise on Fever has been published by Dr. E. Bartlett,†† in which the author endeavours to show that the typhoid fever of France, apparently the most frequent form of fever in America, is a distinct species from the typhus of that country and of England.

*Congestive Fever of America.* Dr. Parry‡‡ has described a congestive fever met with in Central Indiana, of which the following are the chief characteristics. It prevails at the close of summer, and through the autumn, occurring chiefly in the low grounds skirting the rivers. The first symptoms are those of an intermittent; but the first paroxysm is imperfectly marked, and during the interval of twenty-four or forty-eight hours, the patient complains only of malaise. The second paroxysm is very severe, the coldness extreme, and the face and extremities of a death-like hue. In this condition the patient may die or reaction may take place in three or four hours. During the cold stage of this second paroxysm, there are profuse discharges from the stomach and bowels, either resembling water in which fresh meat has been washed, or containing much blood; intense thirst, extreme restlessness, and desire for air, rapid small pulse, and frequently muscular cramps: but no disturbance of the mental functions, except in the agony of death, or where there is congestion of the head. The usual length of the fatal paroxysm is from three to six hours. The treatment was directed, in the cold stage, to arrest the discharges; for which purpose morphia, camphor, and blue pill, or acetate

\* Lancet, Feb. 25 and March 4, 1843.

† Lond. and Edinb. Monthly Journal, May 1843.

‡ London Med. Gazette, vol. 1, 1843, pp. 204, 503, 599.

§ American Journal of Med. Sciences, July 1843.

|| History, &c. of Typhoid and Typhus Fever, by Ellisa Bartlett, M.D.; Philadelphia, 1843.

†† American Journal of Medical Sciences, July 1843.

‡ L'Expérience, 27th April 1843.

|| Ibid. Aug. 25, 1843.

of lead, morphia, and calomel were employed. Sinapisms and stimulant frictions to the abdomen were useful, and cupping to relieve local congestion. Internal stimuli were neither productive of good nor harm; but iced drinks were of use. If reaction could be established, quinine became *the* remedy, and rarely failed to save the patient.

*Erysipelatous Fever.\** A malignant form of fever attended at the onset with sore throat, and subsequently with erysipelatous inflammation of the integuments, and often of the internal serous membranes, was epidemic in Vermont and New Hampshire, in 1842-3. The inflammation of the skin and cellular membrane was such as to produce disorganization and separation of contiguous parts to a great extent. A semi-putrid thin fluid was infiltrated into the cellular tissue, so acrid that when discharged the "*hardest steel was directly penetrated by it, as by nitric acid,*" and instruments used to open abscesses were, after a few hours, "*entirely eaten through.*"! When internal organs were affected, the patients almost invariably died. During the prevalence of the epidemic, cases of puerperal peritonitis, of the same character, were sensibly increased, and in many instances appeared to be communicated by the medical attendant.

[The appearances in the abdomen after death, both of non-puerperal and puerperal cases, were precisely those that have so often been described as marking the true malignant puerperal fever of this country.]

An account of the same, or a similar epidemic, occurring in Riply and Deartown counties, Indiana, is given by Dr. Sutton,† who also subscribes to its contagiousness. Dr. Allen, in his account of the same disease, states that "when the manifestations were external, and the inflammation of the skin did not recede, there was little or no danger to be apprehended;" "but that if the local affection manifested itself either primarily, or by metastasis, in a vital or internal organ, the most serious consequences were to be apprehended. The local manifestations were often primarily denoted by an internal organ. The true character of the disease could then only be ascertained by the severity of the chill, ensuing heat, and the kind of diseases prevailing."‡

*Intermittent Fever, condition of the Spleen in.* M. Piorry, in a memoir presented to the Academy of Sciences,§ has given the conclusions to which he has been led by the consideration of 165 recorded cases, and upwards of 1000 others of which he has no written record. The condition of the spleen was ascertained by means of the plessimeter and percussion, and the results are, therefore, in the author's estimation, of the utmost certainty. From the analysis of 163 cases, he considers it certain that ague occurs, independent of miasmatic causes; and that in many instances it arises from falls, blows, and inflammation of the spleen. Enlargement of this organ is so frequent in ague that, in 154 of 161 cases, it exceeded the normal size; and in four of the remaining seven it was painful, which was also the case in eighty-two of the whole number. Splenic pains sometimes precede the fever. Organic affections of this viscus may either produce or keep up intermittents. He thinks there is no evidence that any persistent alteration of the blood can directly produce ague. Miasmatic causes act through the nervous system of the spleen. Sulphate of quinine quickly dissipates a large majority of the cases of enlarged spleen, and even in its healthy state its volume may be reduced by the introduction of quinine through the stomach or bowels. In two cases he thinks fatal hemorrhage might be attributed to the too rapid diminution of the spleen under the influence of quinine; hence the dose of this medicine should be proportioned to the enlargement. The quinine, he believes, is absorbed by the veins, and cures ague by its direct action on the spleen. A case of intermittent fever observing a septan period, is recorded by Dr. Laroche (père) of Angers.||

\* American Journal of Med. Sciences, Jan. 1844, p. 13. Account of the erysipelatous fever, as it appeared in the Northern section of Vermont and New Hampshire, in 1842-3, by Drs. Hall and Dexter.

† Ibid. same date, p. 247.

‡ Boston Med. and Surg. Journal, vol. xxx, No. 2, et seq.

§ L'Examineur Médicale, No. 13, t. iii.

|| Archives Générales de Méd.; Mars 1843.

*Intermittent Fever, Treatment of.* Dr. Cenni,\* in a letter to the Editor of the *Racogliatore Medico*, states that many cases of ague, resisting all other plans of treatment, he has found give way to mercury associated with quinine. Tenderness of the spinal column, in persons affected with intermittent fever of a chronic form [previously noticed by MM. Griffith and Van Mons], M. Gouzeet† has found to occupy chiefly that portion included between the third and fifth dorsal vertebrae. In such cases he has derived from local depletion and counter-irritation great success.

M. Chomel‡ has given an abstract of his experiments with various so-called febrifuges in the treatment of intermittent fever, (which illustrate in a striking manner, the fallacies to which we are exposed in estimating the value of new remedies.) Powdered holly ("poudre de houx") having been much vaunted, he proposed to treat with this substance twenty-two patients, but seven had no paroxysm, after admission into the hospital (La Charité); of the remaining fifteen, eight had other slight diseases, such as bronchitis, and were cured without the aid of any specific febrifuge. In four of the remaining seven, the paroxysms became daily more slight without the interference of medicine, and in the other three the paroxysms returned with regularity, and were of an unyielding and fixed character. In these the powdered holly was tried and given to the extent of ʒij for a dose, without any benefit; but on exhibiting quinine speedy cures were obtained. Had the holly been given to the whole twenty-two, it might have had the credit of curing nineteen, and failing only in three, a conclusion manifestly false. He tried salicine in the same way, and found it equally inefficacious, and the whole of his observations have led him to conclude that cinchona bark is the only febrifuge.

## 2. DISEASES OF THE DIGESTIVE SYSTEM.

*Stomach.* After noticing that the act of regurgitation is often a normal one, even in man, being the natural means of relieving an overloaded stomach; that it is seen in infants, who by what is called "possetting," expel the superabundant portion of milk from the stomach; that at all ages the stomach is thus enabled to expel gases or the morbid fluid secretions which characterize certain forms of dyspepsia; and that some persons possess the power of regurgitating their solid food, remasticate it, and again swallow it like ruminating animals; Sir H. Marsh§ proceeds to point out that in other instances, regurgitation of food without nausea constitutes a distinct and peculiar disease. Many of the cases observed by the author were evidently of hysterical origin.

The second case given in illustration, is that of a young woman, æt. 26, who previously to being affected with this stomach affection, had suffered from almost every possible variety of hysteria, and among others, from distressing and obstinate cough occurring abruptly, at the same hour each day, for many months. Some time after this, having been in good health for several months, she was seized with nausea and vomiting to such an extent that scarcely any food remained on her stomach. The nausea ceased in about three weeks, and the food instead of being vomited was regurgitated, and few articles would remain on the stomach. This regurgitating action of the stomach had a periodic character. It was preceded by an oppressive sense of fulness and weight at the epigastrium, which was removed by the ejection of the food. The spine was occasionally, and at various points, slightly tender on pressure. A variety of remedial means were used, and in some instances, with striking though temporary benefit. The last remedies employed were iced coffee internally, and crude ice externally to the epigastrium. In another instance, violent epileptic paroxysms occurring every hour for twenty-four hours, were succeeded, first by diarrhoea, and then by regurgitation of food; and the author has seen several other well-

\* *Gaz. Medica di Milano*, Sept. 16, 1843.

† *Annales de la Soc. de Méd. d'Anvers*, March 1843.

‡ *Discours d'Ouverture*, &c.; *Gazette des Hôpitaux*, 19 Nov. 1842.

§ *Dublin Journal of Med. Sciences*, July 1843, p. 437.

marked instances of the same disease in young children, resulting from innate constitutional delicacy, and coexisting with various disturbances of the nervous system, and of the digestive functions. He has seen instances of it in conjunction with chorea, and remarks that in many cases of hooping-cough, the partial or total evacuation of the stomach, at the close of the fit, is the result, not of the act of vomiting, but of regurgitation. In another class of cases, this peculiar disease holds a prominent position among many symptoms which appertain to obstinate and protracted forms of dyspepsia. Illustrative cases are given.

A case of *pyrosis* occurring periodically in a young girl *æt.* 12, is recorded by Dr. Eitner.\* The fluid was discharged with great force by sudden vomiting, and in enormous quantities. It appeared to collect gradually in the stomach, when pain and oppression of the epigastrium occurred, which were relieved by vomiting. The disease gave way speedily to a mixture containing extract of quassia, with laurel-water and carbonate of potash; a camphorated ointment with laudanum being rubbed over the stomach.

A fatal case of *hematemesis* occurring, without any assignable cause in a previously healthy man, is recorded by Dr. Laroche.† The patient, a soldier, who had never been known to complain of any dyspeptic symptoms, was suddenly seized with profuse hemorrhage from the stomach, of pure, florid blood, and speedily died. The stomach was found filled with black blood, but though carefully examined, presented no lesion, except a little softening of the mucous membrane. All the other organs were sound.

Dr. Inray‡ has given an account of the "*mal d'estomac or cachexia Africana*," as seen among the negroes of Dominica; from which it appears that there is nothing peculiar in the pathology of the affection. The chief characteristics seem to be derangements of the functions of digestion and assimilation. The mucous membrane of the stomach and intestines was sometimes merely bloodless, at other times it was softened, whilst occasionally there was ulceration with scirrhous thickening near the pylorus; the mesentric glands were frequently enlarged and "diseased." Dr. Inray's treatment consists in the exhibition of ferruginous tonics, combined with antacids.

*Dysentery* has been epidemic in various districts of France during the period comprised by this Report. M. Peysson§ (military surgeon at Lyons) is convinced of the superiority of venesection over every other mode of treatment. He employed it successfully in 1840, in more than 300 cases, but no mention is made of the number of fatal cases. M. Senac, of Lyons, bears testimony to the success of this mode of treatment.

M. Labarthe ("aide major" of M. Peysson)|| details with the utmost brevity, eighty-six cases occurring under the care of M. Peysson. Seventy-three of these are given in about the same number of words, eight are detailed more fully, but very imperfectly. Fourteen cases were admitted into hospital in the month of June, twenty-three in July, and forty-four in August. The mean time that the disease had existed before admission into the hospital was seven days. All were soldiers. The treatment consisted principally of general bleeding, cupping, leeches, mucilaginous drinks, and mixtures, frequently containing opiates, emollient lavements, and poultices to the abdomen. The quantity of blood drawn, at first, was, in thirty-five cases, 20 oz.; in twelve, 18 oz.; in nine, 16 oz.; in nine, 15 oz.; and in sixteen, the quantity is not mentioned. A second bleeding was adopted in twenty-three cases, and a third in three cases. Opiates were administered to sixteen or seventeen. The average time passed in the hospital was seventeen days. Three patients died, or 1 in 25; and five re-

\* *Medicin. Zeitung*, Feb. 23, 1843.

† *Archives Gén. de Méd.* Fev. 1, Sec. 4, p. 367.

‡ *Edinburgh Medical and Surgical Journal*, No. 155.

§ *Gazette des Hôpitaux*, Sept. 20, 1842; from *Bull. de la Soc. de Méd. de Toulouse*.

|| *Bulletin de l'Acad. Roy. de Méd.* 15 et 30 April 1843.

quired leave of absence from the army for convalescence. [This treatment, by no means new, was practised by Cleghorn at Minorca, in 1744-49; and by Lamoricière at Lyons, in 1625, as well as by others.] The epidemic prevailed in many of the communes of the Loire Inférieure, and raged with great intensity at Ebray, near Chateaubriant, where many died. M. Aubrée\* treated twenty-seven cases and cured twenty-five. His treatment consisted in the administration of an emetic, and subsequently of an infusion of bark with gummy extract of opium, three times a day, and the following pills: R. camphoræ, 23 centigr.; extr. opii gumm. 15 centigr.; extr. cinchonæ, 2 grammes; M.f. pil. viij: S. j. horâ somni. The patients had a tisan of althæa (palustris!), for drink, emollient poultices to the abdomen, and lavements of linseed and mallow were used daily. M. Aubrée ascribes the epidemic to ergot of rye, more or less of which he states entered into the composition of the rye bread of the peasants.

In the epidemic as it prevailed near Bordeaux in 1842, M. Chabery† tried the antidyenteric emulsion of Bouchardat (Annuaire de Thérapeutique, 1841,) which consists of a decoction of Iceland moss made into an emulsion with poppy seeds, to which are added syrup of poppies and syrup of quinces. From this, preceded by antiphlogistic treatment, he derived good results. But its dearth led him to try a decoction of acorns, previously slightly roasted. This he found exceedingly useful in both the acute and chronic forms of the disease, especially in children. MM. Masselot and Follet,‡ in a lengthy memoir, have described the epidemic as it reigned during the months of August, September, and October, 1842, at Versailles. They came to the following among other conclusions: That the disease is not an enterocolitis, but a general affection of the whole system, depending on a cause allied to marsh miasm. The intestinal ulceration which is always present, after the sixth day, is not due to inflammation, but to softening of the mucous membrane, or gangrene. False membranes in the alimentary canal are never met with in the acute stage. The treatment has yet to be sought. An epidemic presenting an adynamic character, prevailed in the autumn of 1841, in the district of Salzburg, and has been described by Dr. Wittmann of Radstadt.§ Its duration was two and a half months, and the number attacked 263, of whom 203 recovered and 60 died. In one case dropsy of the cerebral membranes occurred and gave rise to severe tetanic symptoms. Post-mortem examinations revealed inflammation and ulceration from the rectum through the colon and cæcum and even into the small intestines. The treatment consisted of tonics, especially the stimulant, emetics, alteratives, and counter-irritants, but neither mercury nor venesection was employed.

*Peritonitis, Strumous.* Sir H. Marsh, Bart., and Dr. F. Churchill,|| have detailed several cases of strumous peritonitis, with effusion, and given some valuable remarks on the diagnosis and treatment of the affection, which, they observe, sometimes assumes an acute character, but is more frequently met with in the chronic form, in which the early symptoms are very obscure. It is said [contrary we believe to the generally received opinion] oftentimes to yield to judicious treatment, if early detected. It is confined to persons of from three or four to about thirty years of age. In many cases the fluid is limpid and serous, and may be wholly absorbed, and leave but few adhesions. The gradually increasing distension of the belly has, in more than one instance, been mistaken for pregnancy. [Their observations do not confirm Louis' statement, that when occurring in adults, the lungs always present tubercles. He affirms that the existence of tubercular peritonitis alone will justify the diagnosis of pulmonary tubercles, though no pulmonary symptoms may be present.] In two of the cases detailed by Sir H. Marsh, occurring in adults, it is distinctly stated that the lungs were free from all traces of tubercle. Attention to the history of the case, and to the early symptoms, affords the chief means of diagnosis.

\* Gazette des Hôpitaux, Nov. 1, 1842.

† Archives Gén. de Méd. p. 147, et ante 1843.

‡ Dublin Journal of Medical Science, 1 March, 1843.

§ Bulletin Gén. de Thérap. 15 et 30 April, 1843.

|| Med. Jahrbuch. d. Oester. Staats. Nov. 1843.

Diarrhœa is a very frequent accompaniment, at first often the main symptom, and should not be suddenly checked by astringents, but is best treated by leeches, blisters, fomentations, and anodyne enemata. The remedies of most importance are topical bloodletting, blisters, diuretics, mercury, and iodine. When the most acute symptoms have thus been subdued, diuretics, particularly inf. digitalis, with nitrate of potash, are of great use. "But of all the curative agents we possess, that which is most valuable is mercury; of all diuretics it is the best: in some cases it must be resorted to at once, in others it is necessary as a preparatory step, to subdue the more acute symptoms by detractions of blood." It is best introduced by inunction, and is sometimes with advantage conjoined with iodine. Iodine internally is occasionally useful, particularly when it acts as a diuretic; and for this purpose it should be associated with liq. potassæ. Sir Henry thinks the opinion that mercury is inadmissible in strumous disease in general, not well founded. Dr. Churchill confirms the utility of the treatment recommended by Sir H. Marsh; [and his statements respecting the symptoms and diagnosis correspond with Abercrombie's.] "In those cases where there is no pain and but slight tenderness, with little disorder of the digestive organs, the principal guide to diagnosis is the enlargement of the abdomen, which ultimately always occurs, and the fluctuation which, by a little care, may always be perceived." A case recorded by Dr. O. B. Bellingham\* offers a good illustration of the obscurity of the symptoms. The patient, a woman æt. 26, presented as the only constant symptoms, a tumid state of the abdomen, quick pulse, emaciation, and a dry but not coated tongue, redder than natural at the tip. The case proved fatal by perforation of the walls of the intestine. Numerous tubercles, and some lymph were found on the peritoneum, but *the lungs were quite healthy*. Dr. Meredith Clymer† contends that the evidence at present collected, does not justify the conclusion to which Sir H. Marsh has arrived, that mercury is the chief remedy. In a paper by Dr. A. Toulmouche of Rennes, will be found some further observations on this subject, especially with reference to the causes of the difficulty of diagnosis.‡

*Ascites.* In M. Velpeau's researches§ on the physiology and pathology of the shut cavities of the body, will be found some experiments on the injection of dilute solutions of iodine into the abdomen, with a view to determine how far this procedure might be adopted for the radical cure of ascites. A remarkable case of ascites is related by M. Cann of Yvetot.|| The patient, a female servant, when 36 years of age, had an attack of entero-peritonitis, which passed into a chronic state, and three months after, the urinary secretion became suppressed, and ascites supervened. From this time, it became necessary to tap her occasionally, to relieve the extreme oppression of breathing. The peritoneum after the operation could be felt to be uneven, tuberculated, and hard. After tapping his patient every six, eight, ten, or twelve days, during a period of fifteen years, M. Cann determined to try pressure by means of card-board passed round the abdomen between folds of linen. This the woman could not endure for more than three days, but from this time the urine became more abundant, and the fluid in the abdomen accumulated less rapidly, so that the intervals between the operations were gradually extended; the last amounting to six months. From this time the patient continued well, gaining flesh and strength. Some enlargement of the abdomen, however, remained, and glandular (fleshy) masses could be felt over different parts, especially over the colon. During a period of sixteen years, the patient was tapped 886 times, and a quantity of fluid was removed, estimated at the enormous quantity of 173 hectolitres and 30 litres, [or upwards of 3812 gallons, imperial measure !]•• Professor Gintac†† has de-

\* Dublin Medical Press, July 5, 1843.

† Philadelphia Med. Examiner, Nov. 11, 1843.

‡ Gazette Médicale de Paris, Nos. 35 and 49, 1842.

§ Annales de Chirurgie, April and May, 1843.

|| Bulletin de l'Acad. Roy. de Méd. t. viii, p. 77.

•• See also a fatal case of enormous hydroptic distension of the abdomen, which contained fifty-nine pints fluid imperial measure, by Sir D. Dickson; Edinb. Med. and Surg. Journal, Jan. 1843.

†† Journal de Médecine de Bordeaux, Jan. 1844.

tailed a case of ascites [presenting many points of interest] produced by ossification and obliteration of the vena portæ. All the abdominal veins which ended in the splenic and superior mesenteric veins were gorged with blood. The liver was pale and irregularly wrinkled or mammillated, and the gall-bladder contained a moderate quantity of thickish bile. M. Gintrac concludes that though the obliteration of the vena portæ modifies, it does not prevent, the secretion of bile; though it materially interferes with the nutrition of the liver. Dr. Debavay\* relates a case of peritoneal dropsy succeeding to puerperal peritonitis, and treated with various remedies with but temporary relief. The abdomen remained tense, hard, and presented a distinct sense of fluctuation. The abdominal organs appeared sound, and the general health was good. Dr. Debavay, determining to try the effect of arsenic, gave  $\frac{1}{2}$  of a grain night and morning, in the form of pill. After some days, when three pills a day were taken, it was necessary to suspend them in consequence of colic pains and diarrhœa. They were, however, again resumed, one or two being taken per diem. At the end of six weeks, the abdomen was less tense, and diminished in size; the urine more limpid, and increased in quantity. The skin, before dry, became soft and moist. The arsenic was continued, at intervals, for six months, when all symptoms of dropsy had disappeared.

*Constipation and Ileus.* Several remarkable cases of protracted constipation have been recorded. One related by Mr. Chalmers, of the Cape of Good Hope,† occurred in the person of a young woman æt. 20, who for three years was unable to empty the bowels without artificial aid; and indeed from her birth required the introduction of a piece of soap, or some other means to procure an evacuation. For three years the appetite was so impaired that all were astonished that life could be supported with so little food. There appeared to be some obstruction in the sigmoid flexure of the colon; but feces in the rectum were never discharged without some artificial aid. During four months only two evacuations were obtained. At the date of the last report, the constitutional powers were beginning to give way. Dr. J. Johnson‡ related to the Westminster Medical Society an instance in which the constipation, induced by scirrhous of the rectum, lasted forty-five days. Dr. Burne's tube could not be introduced, and all medicines failed to produce any effect. All ingesta were vomited, but there was no stercoraceous vomiting. The constipation set in suddenly. Half a pound of fluid mercury which had been given five days before death, could not afterwards be discovered in the intestines. A similar case is recorded by Mr. Wallis, of Castle Cary,§ in which the constipation lasted forty-three days.

Three cases of *obstructed intestine and recovery after fecal vomiting* are recorded: one by Sir George Lefevre,|| in a girl æt. 11, who recovered after the ninth day of obstruction, by the spontaneous evacuation of the bowels, attended by much vomiting of dark green matter; and a second by Dr. Mayo,\*\* in an old lady, who recovered after fecal vomiting of seven days, on passing a large intestinal calculus. A third case is related by Dr. Staal,†† in which, after the occurrence of stercoraceous vomiting, the patient was completely relieved by the injection of gr. iv. extr. belladonnæ in gruel. Narcotic symptoms ensued, with speedy fecal discharge, and the patient was well in two days. Dr. Kosching relates a case of *ileus*, occurring to a man whilst loading a waggon, in the course of which he had frequently to mount and jump down. The lower extremity of the ileum was found simply twisted once, on itself, and when untwisted was quite pervious. The surrounding intestines were much distended with gas, and slightly reddened. [Would not crude mercury probably have saved this man?] M. Heldenbergh‡‡ states that in a case of ileus, in which constipation had lasted six days, and the symptoms had become threatening, evacuations, and complete relief were obtained by five-grain doses of sulphate of quinine, repeated

\* Gazette Méd. de Paris, 9th March, 1844.

† Med. Gazette, Sept. 30, 1842.

‡ Lancet, Nov. 26, 1842.

§ Ib. Dec. 17, 1842.

|| Med. Gazette, vol. II, 1843-4, p. 26.

\*\* Med. Gaz. May 3, 1844.

†† Oppenheim's Zeitschrift, Feb. 1844, p. 258.

‡‡ L'Expérience, March 21, 1844; from Bull. de la Soc. de Méd. de Gand.

every half hour, for thrice. The constipation returning, was again relieved by quinine.

**Tympanitis.** In a case in which intestinal disorder was attended by great tympanitic distension of the bowels, M. Levrat (ainé de Lyon)\* had recourse to paracentesis of the small intestine over the most salient point. The operation was performed with a trochar of the size of a stocking-needle [apparently similar to Dr. Babington's,] and gave immediate relief. Fifteen days afterwards the patient was about his business. In the case already referred to of so-called gangrene of the lung, terminating by perforation of the diaphragm and peritonitis, which was attended by great tympanitic distension of the abdomen, the peritoneum was four times punctured with considerable temporary relief.†

**Recovery after perforation of the ileum in fever.** In a case of fever, occurring under Louis'‡ care in the hospital Beaujon all the symptoms of perforation in the vicinity of the ileum occurred on the 10th or 12th day of convalescence. The patient recovered after [certainly not in consequence of the] treatment, which consisted of *enemata*, leeches to the abdomen, and three small doses of morphia.

**Liver, fatal spontaneous hemorrhage from.** Dr. Levieux (fils)§ in a memoir on lesions of the abdominal organs, considered as the causes of sudden death, has related a remarkable example of sudden death from hemorrhage from the liver without effusion into the abdominal cavity. A custom-house officer, aged 43, having always enjoyed and being, at the time, apparently, in perfect health, after having been actively employed all day, dined with his fellow-officers, and dropped suddenly dead. Nothing in the head or chest could be detected to account for death. The abdominal organs were, however, all gorged with blood, and the liver enlarged, but its external aspect natural. Internally, it presented all the characters of incipient putrefaction, both as regards colour and density, was readily broken by the finger, and gave exit on each incision by the scalpel to a large quantity of blood. The gall-bladder, duodenum, and small intestines were filled with blood of the aspect of wine lees. The stomach contained a large quantity of food mixed with a blackish liquid, of a nauseous smell. The large intestine was distended with gas. No ulceration or rupture of any part was detected. M. Levieux considers the case as a species of apoplexy of the liver, the blood having been discharged by the biliary ducts into the duodenum, &c., without rupture of the liver. The following case is recorded by Dr. James Abercrombie.|| A lady who, during her pregnancy, had suffered from dyspeptic symptoms, was suddenly seized, soon after delivery, with pain in the right hypochondrium, followed by symptoms of collapse, threatening immediate death. There was no uterine hemorrhage, nor could any satisfactory cause be assigned for the symptoms, which gradually subsided, so far that she lived till the following day, when an attack of shivering supervened, and was followed by vomiting, and all the symptoms of collapse of the previous day. In twelve hours after she died. On laying open the abdomen, a large sac presented itself, occupying the superior and anterior surfaces of the liver. On attempting to remove this organ, about lb.ij. of fluid and coagulated blood escaped, and two small openings, about an inch apart, were detected in the liver, through which the blood had escaped from a branch of the vena portæ. The sac proved to be the peritoneal covering, which had been detached by the effused blood. The liver was throughout diseased, mottled, and exceedingly friable. The uterus and all the other viscera were perfectly sound.

**Liver, tumour connected with.** Mr. Barlow, of Writtel,\*\* Essex, relates a case in which, after injury, the patient suffered from pain in the region of the liver, with symptoms of collapse. Two days after, the motions were white and the

\* Bulletin de l'Acad. Roy. de Méd. t. ix, p. 9. † Journal des Connais. Méd.-Chirurg. Nov. 1, 1842.

‡ Archives Gén. de Méd. p. 74, 1843.

§ Annales de la Chirurgie, Fr. et Etr., in L'Expérience, April 25, 1844.

|| Medical Gazette, Sept. 13, 1844.

\*\* Ib. May 24, 1844; Roy. Med. et Chir. Trans.



urine dark, as in jaundice. A swelling gradually appeared over the region of the liver, which at length, from its size, produced so much distress, that it was punctured, and seven quarts of fluid discharged with great relief. The fluid had all the appearance of pure bile, and the analysis of subsequent tapplings proved it to be so. The man was tapped four different times subsequently; on the last occasion the tumour was not emptied, and pain was felt; but on the following day bile appeared in the stools, the urine became paler, the swelling gradually subsided, and the patient recovered. [? Distended gall-bladder, or effusion of bile behind the peritoneum, from rupture of the liver.] An example of fatty liver, unconnected with scrofula, is related by Dr. Watson in a clinical lecture.\*

*Biliary calculi, jaundice, &c.* M. Duparcquet† considers clonic spasms of the right hypochondrium, extending down the side and followed by convulsive movements of the muscles, pathognomonic, of impacted biliary calculi. In four cases out of thirteen in which retention of bile was produced by this cause, the above symptom was present, and he has met with it in no other disease. His remedy (Durand's) is a mixture of ol. ricini and æther. In a case of jaundice related by Dr. Graves,‡ the only lesion discovered after death was inflammation of the mucous membrane of the gall-bladder. The attack commenced with pain in the right hypochondrium, extending towards the epigastrium, to which succeeded the usual symptoms of icterus. The pain was persistent, and the patient saw everything of a yellow colour. Death was preceded by delirium and coma. The lining membrane of the gall-bladder was the seat of intense inflammation, and covered with coagulable lymph, but the inflammation did not extend to the ducts. Dr. Seeger§ reports the case of a woman previously healthy, who after suffering from colicky pains and tenderness of the right hypochondrium, presented a tumour at the umbilicus, from which were discharged for a length of time a number of gall-stones.

*Pancreas.* Dr. Claessen's treatise on diseases of the pancreas|| contains a vast amount of materials for the elucidation of diseases of that organ. In reference to diagnosis, he states that though in thirty cases there was a watery discharge from the mouth, he objects to the inference that this intimates either increased pancreatic secretion or vicarious action of the salivary glands. He rather refers it to the stomach, more particularly as the pyrosis was frequently associated with vomiting and other evidence of gastric disturbance. He therefore, places no confidence in the diagnostic value of pyrosis. Pain and costiveness are frequent symptoms of pancreatic inflammation. Dr. Batersby\*\* has also collected a great deal of valuable information on the obscure subject of pancreatic disease. In one of the cases detailed by himself the diseased pancreas was at first mistaken for aneurism of the aorta; and in a second case, disease of the pancreas was diagnosed by some German physicians attending Dr. Graves's clinique, from the extreme moisture, cleanness, and macerated appearance of the tongue and mouth generally. In the former cases the same state of tongue existed, and there was also salivation. Dr. B. alludes particularly to the diagnostic importance of both salivation and pyrosis, and of the sympathy existing between the buccal and abdominal salivary glands.

*Spleen, removal of.* M. Berthet de Gray†† relates the following case. A middle-aged man received a wound in the side, through which the spleen eventually protruded, and becoming gangrenous, was removed. The man recovered and lived thirteen years, enjoying sound health, his digestion being usually good. After death, produced by pneumonia, all that remained of the spleen was found to be a small portion of the size of a filbert, adhering to the stomach. Mr. Eagle‡‡

\* Provincial Medical and Surgical Journal, Nov. 4, p. 106.

† Revue Médic. April 1844, p. 306.

‡ Dublin Journal of Med. Science, Nov. 1843.

§ Oesterreich. Med. Wochens. Feb. 4, 1843.

|| Die Krankheit. d. Bauchspeicheldrüsen, van D. H. Claessen; Köln, 1842.

\*\* Dublin Journ. of Med. Sciences, May 1844.

†† Séance de l'Académie Royale de Médecine, 9 Juillet, 1844.

‡‡ Lancet, Oct. 8, 1843.

asserts that fattening and cicatrization of the tubercles were the results of the removal of the spleen in his experiments on rabbits affected with tubercle (?) of the liver and marasmus; he therefore proposes to tie the splenic artery in patients moribund from inanition, arising from disease of the nutrient circulation, rather than from structural disorganization, as in some cases of phthisis and marasmus!!

### 3. DISEASES OF THE RESPIRATORY SYSTEM.

*Bronchitis, &c.* An epidemic catarrh prevailed at Nantes in 1840-41, of which an account, as it was observed in the Hôtel-Dieu of that city, has been given by M. Mahot and his colleagues.\* It attacked principally the soldiers of the garrison, and especially the young recruits. It appeared under two forms: one simple, analogous to the influenza—the other a “suffocative capillary bronchitis,” a very severe disease, having the following characters: 1, succeeding to an attack of acute catarrh; 2, expectoration of thick yellow sputa; 3, extreme acceleration of the pulse; 4, death supervening suddenly on any movement of body; 5, softness of the substance of the lungs, and an abundance of whitish, or yellowish muco-purulent matter in all the bronchi, sometimes with lobular, or simple pneumonia. An account of a similar epidemic, which prevailed in Paris in the spring of 1840, has been given by H. Lasserre.† It was observed by him in La Pitié hospital under Piorry. Of thirty-one cases, two terminated fatally. Tartar emetic was the medicine chiefly relied on. From the thesis of M. Foucart,‡ the disease appears to have consisted in an acute inflammation of the smaller bronchi, going on to purulent secretion, but not producing hepatization, and to have corresponded closely with the “catarrhe suffocante” of Laennec. A well-marked case of *hay asthma* is recorded by Mr. Cheyne,§ in which the wife of a stable-keeper (whose lofts were filled with hay just brought in, and having an unusually powerful odour) received no relief from ordinary remedies, but who was speedily relieved of all the distressing symptoms on removing to lodgings, only one hundred yards distant. M. Gerard|| calls for farther attention to the efficacy of *emetics in the early stage of acute bronchitis*. In several cases that he adduces, in which the pulse was upwards of 100, and considerable pyrexia was present, all the febrile symptoms rapidly subsided, after two or three emetics of ipecacuanha and tartar emetic.

*Foreign bodies in the bronchi.* The interest excited by the case of Mr. Brunel has brought to light many curious facts relating to the introduction of foreign bodies into the bronchi, and given rise to much discussion on the treatment of such cases. Mr. Brunel's case has been detailed by his medical attendant, Sir B. Brodie, before the Medic. Chir. Society.\*\* On the 3d of April, while playing with a half-sovereign, the coin slipped behind the tongue, and passed into the larynx. This was followed by a fit of coughing, severe sense of choking, and vomiting. On the 6th and 7th the cough returned, and after exposure to cold, became worse, and was attended by the expectoration of mucus and a little blood. Pain in the right side of the chest was now complained of. On placing himself in an inverted position over the back of a chair, a loose substance was felt to be dislodged, and passed up to the larynx, when the pain in the chest was relieved. Nothing abnormal could be detected by the stethoscope. On subsequently inverting the body (by means of a machine on which the patient was laid, and by which either the head or feet could be elevated at pleasure,) and striking the back, the cough suddenly became so violent and the sense of choking so severe, that it was deemed prudent to desist. On the 27th tracheotomy was performed, and on two occasions it was attempted to remove the coin by the forceps, but the convulsive coughing thus excited rendered the attempt vain. On the

\* Relation d'une Epidémie de Bronchite, &c., Nantes, 1842, reviewed in Bull. Gén. de Thérap. 15 et 30 Oct. 1842.

† Gazette des Hôpitaux, Oct. 27, 1842.

‡ Arch. Gén. de Méd. t. iii, 1843, p. 195.

§ Archives Gén. de Méd. Oct. 1842.

¶ Med. Gazette, Dec. 2, 1842.

\*\* Lancet, vol. iv, 1842-3, p. 480.

13th of May the aperture in the trachea having been kept open, the body was again inverted on the plane, and the back being struck two or three times, the coin passed into the mouth, and fell against the incisor teeth; a little blood was passed at the time, but there was no cough nor any convulsive distress, such as had before occurred. From this time he rapidly recovered. The following cases may also be referred to. A case in which tracheotomy was performed, and a stone was removed from the right bronchus of a child *æt.* 6, by means of slightly curved polypus forceps. No respiration could be heard over the right lung previous to the operation.\* A case in which a beech mast was retained in the air-passages for nine years and a half, and the patient, a girl *æt.* 16, recovered after its spontaneous ejection. The symptoms had been cough and periodical discharge of pus, but none of the constitutional symptoms of phthisis. The growth and development of the frame had, however, been arrested.† A successful case of tracheotomy in a boy, *æt.* 5, who had swallowed a plum-stone, which was expelled during a fit of coughing, through the opening in the trachea.‡ [The conclusion to be drawn from these and other cases alluded to] in the course of the discussions that have taken place, is certainly in favour of the performance of tracheotomy.]

*Lungs, abscess of.* M. Aran§ has published a valuable memoir on abscess of the lungs, under which designation he comprises every collection of pus, in an accidental or abnormal cavity, formed at the expense of the organ, by the separation or destruction of its molecules, from whatever cause it may originate. He, therefore, divides pulmonary abscesses into—1, Phlegmonous; and, 2, Metastatic, or symptomatic; placing in the former category those which succeed to softening of tubercles. He then proceeds to point out the rarity of the true phlegmonous abscess, and refers to most of the recorded cases, distinguishing the forms presented. In describing the anatomical characters he notices the fact that gangrene of the lungs is sometimes only a consequence of abscess, quoting an example from Andral (*Clin. Méd.* t. ii, p. 299,) and giving an analogous case observed by himself. In fourteen of twenty-four cases the abscess was seated in the right lung [as might be expected, from the greater frequency of pneumonia of the right lung,] in six in the left lung, and in two both lungs were affected. In ten cases the upper lobes were the seat of the abscesses, and in five the lower. [One, among other proofs, that might be adduced to show that pneumonia of the upper lobe is not so rare as has been represented.] The abscesses are generally covered by a layer of pulmonary tissue, and are seldom deeply seated. The following are the ages of 28 patients:—2 under 20; 12 between 20 and 40; 9 from 40 to 60; and 5 from 60 to 70. 11 were women and 17 men. The majority had had their health deteriorated by excess of work or previous sickness; but a certain number were of strong athletic constitution and sanguineous temperament. [The author of this Report once met with a pneumonic abscess in a child between three and four years of age, who died of croup, with which the case was complicated. The abscess occupied the centre of the upper lobe of the left lung. The surrounding lung was everywhere permeable to air, except the portion forming the walls of the abscess and that which intervened between it and the pleuræ separating the two lobes, which were adherent from pleuritic inflammation. No tubercles existed, and the contents of the abscess consisted of pure pus.] *The diagnosis* of pulmonary abscess M. Aran considers impossible, as long as no communication exists with the bronchi or pleura. After this the diagnosis between this lesion and tubercular cavities, or those resulting from pulmonary apoplexy and dilated bronchi, is to be determined—1, by the seat, in the middle and inferior parts of the lung [? see above;] 2, the presence of bronchial respiration and crepitant râle around the excavation; 3, the slow progress of the disease; 4, the continuance of embonpoint and strength; and, lastly, by the previous existence of pneumonia. M. Aran at-

\* Provincial Med. and Surg. Journal, Sept. 2, 1843, by Edwin Casson.

† Idem.

‡ Idem.

§ Gazette Médicale de Paris, Sept. 24 and Oct. 8, 1842.

tempts to show that cicatrization of pulmonic abscesses is not so rare as represented, by stating that of 59 cases which he has collected, 29, or about half, thus terminated! He adduces one tolerably satisfactory case, occurring under his own care. His observations on the treatment and on the other forms of the disease, offer nothing new or interesting.\*

A case of *gangrene of the lung*, terminating favorably, is recorded by Dr. A. Szerlecki,† which, though well marked in so far as respects the existence of gangrene, does not justify the designation given to it of idiopathic gangrene, unpreceded by pneumonia. The favorable result is attributed to the use of acetate of lead and opium. A less satisfactory case, as regards the diagnosis, is given by Dr. Zurkowski,‡ in which the cure is attributed to acetate of lead, creasote, and galbanum. In connexion with this subject, reference may also be made to a curious case detailed by Professor Romig, of Grau,§ in which portions of healthy lung were expectorated. The patient, æt. 34, had for some years been subject to moist cough, unattended by pain. In the course of an anomalous illness, characterized chiefly by abundant hemorrhage from the bowels, cough and dyspnea came on, and during a violent fit of coughing he brought up a portion of apparently healthy pulmonary substance, one inch and a quarter long and half an inch broad and thick, of the colour and appearance of healthy lung, and which swam in water. On the following day another similar but smaller portion was expectorated. Reference is made to a similar case recorded in the second number of the *Central Zeitung*, by Dr. Joel, of Berlin.

*Pleurisy, Diagnosis.* The existence and characters of bronchial respiration in pleuritic effusions have attracted considerable attention in France. That the sound of respiration is not obliterated in pleurisy has been maintained by M. Hirtz, Andral, Cruveilhier, and many others. M. Monneret has given his experience on this subject.\* The sound, he says, in most cases resembles that of expiration as heard under the clavicles in different stages of pulmonary phthisis. Usually the inspiratory sound is scarcely appreciable, and the abnormal sound accompanies expiration only. When both inspiration and expiration are heard, the latter is always the most intense. Though, in many cases, the "souffle" of pleurisy differs from that of pneumonia, it presents various shades, and cannot be distinguished by its "timbre" alone. It is usually heard over the inferior angle of the scapula and its lower third, or even as high as the spine of the scapula, and along its inner border. Wherever the tubular souffle of pleurisy is heard, ægophony (not brochophony) is also present (?) and dulness on percussion extends as high as the spine of the scapula. Five cases are given, corroborating the above statements, and in which the true symptoms and signs of pneumonia were absent, and the treatment such as would not have proved sufficient in pneumonia.

M. Netter†† also states that he has found bronchial respiration to be a frequent phenomenon in pleurisy, and points out the intimate connexion between ægophony and the pleuritic "souffle," the latter being as constant as the former. In every case in which ægophony was present, the bronchial murmur accompanied expiration, and was sometimes feeble, of short duration, and metallic in its character. The latter circumstance he considers important, as explaining the nature of ægophony. He rejects Laennec's explanation of this phenomenon, which he states he has met with when the fluid effused was considerable. He in fact believes it to be dependent on the bronchial murmur, and affirms that the former is the more trembling, and stuttering, in its character, in proportion as the latter is stronger. Dr. Chambers, of Colchester,‡‡ has found "a gentle gurgling sound," as if produced by the rolling or displacement of a fluid, to be

\* See also a case of extensive purulent infiltration and abscess of the right lung, in *Provincial Medical and Surgical Journal*, Oct. 8, 1843.

† Schmidt's *Jahrbücher*, No. xi, 2 Heft, 1844.

‡ Ibid. same date.

§ *Allg. Med. Centr. Zeitung*, Oct. 29, 1842.

|| *Archives Gén. de Méd.*, 2de Ser. t. xlii.

\*\* *Gazette Méd. de Paris*, Dec. 31, 1842, and *Gazette des Hôpitaux*, 1 Nov. 1842.

†† *Gazette Méd. de Paris*, 6 Jan. 1843; *Archives Gén. de Méd.* March, 1843. ‡‡ *Lancet*, May 4, 1844.

an invariable attendant of pleuritic effusion. It is most readily detected in the reclining posture. M. Damoiseau\* insists on the importance of a friction sound occurring on the absorption of the liquid, as diagnostic of its disappearance, and which sound he states, is preceded by a crepitus resembling that of pneumonia. Dr. Levy, of the Val de Grace, confirms most of M. Netter's statements.†

Dr. Zechmeister,‡ from observations made on a number of cases [how many he does not say] concludes that the decubitus of pleuritic patients is of no diagnostic value, though he states that in the acute stage, when there is much pain and fever, they always lie, either on the sound side, or inclining to the sound side; and in the opposite postures, in the later stages, when there is no pain either on pressure, or from the thoracic movements.

*Empyema, Diagnosis of.* Mr. M'Donnells' 'Contributions to the Diagnosis of Empyema with cases,'§ are exceedingly valuable, and contain new and important views of several points connected with this affection, which claim careful attention. The first part of his paper contains three cases, two original and one reported by Dr. Croly, (Medical Press, vol. 8, p. 135) of 'Pulsating Empyema of Necessity.' These cases, "perfectly new in the history of empyema," presented "large pulsating tumours in the situation usually occupied by the apex of the heart," which organ, in all the cases, "was dislocated to the right of the sternum." The tumours were, in fact, abscesses formed by purulent matter effused from the pleura, and making its exit in the vicinity of the heart. This organ, pushed out of its normal position, pulsed strongly and equally against the walls of the abscesses, the contents of which being fluid and of equal density, communicated a uniform diastolic impulse, without thrill, or bruit de soufflet, to all the surrounding parts, but most intense nearest the source of pulsation. In two of the cases, besides the tumour in the situation of the heart's apex, others existed posteriorly between the tenth and eleventh ribs, which, from their size (that of a hen's egg), situation, and more feeble pulsation, were more likely to lead to the supposition of aneurism. The remarks which Mr. M'D. makes on the co-existence of purulent expectoration, with empyema, are important. In his first case, the patient having been labouring, for some time, under severe diarrhoea, expectorated in the course of one day, as much as a pint of greenish pus, and the diarrhoea was suddenly checked. On examination, post mortem, no trace of communication could be detected between the sac of the empyema and the bronchi, the lining membrane of which was perfectly sound, and free from all signs of inflammation. He therefore considers the case as offering an illustration of vicarious action of the mucous membranes of the lungs and intestines, by which an evacuation of pus is effected, and a corresponding diminution of the empyema occurs. "Purulent expectoration, of frequent occurrence in empyema, is often indicative merely of an effort of nature to get rid of the purulent collection by the readiest outlet." On the condition of the sound lung it is observed, "that though true bronchitis sometimes occurs, when the lung of the affected side is so compressed and bound down by adhesions as to be unable to take any part in the respiratory process;" "not infrequently, mere congestion of the mucous membrane will give rise to all the physical signs of bronchitis, or some of the stethoscopic signs of pneumonia, to which too much importance should not be attached." It has been generally supposed that the only way in which the liver is engaged in empyema, is by being depressed mechanically, when extensive effusion of the right side exists; and its condition in empyema of the left side has been overlooked. Mr. M'D. takes a no less new, than ingenious view of this subject. Epigastric and hypochondriac tumours occur in empyema of the left side, as well as of the right; and in both cases are to be ascribed not so much to mechanical displacement (which is not denied,) as to actual enlargement of the liver, from congestion, "*analo-*

\* Archives Gén. de Méd. Oct. 1843.

† Oesterreich. Med. Wochen. April 1, 1843.

† Gazette Méd. de Paris, 6 Jan. 1843.

§ Dublin Journal of Med. Science, March, 1844.

gous to what takes place in morbus cordis, and diseases of the lungs, attended with imperfect excretion of the blood." [The accounts given of the state of the liver by many authors (who have not taken this view of the subject) are confirmatory of Mr. M'D.'s views, which are certainly consonant with established laws.]

Dr. Krause,\* who has supplied a good summary on the whole subject of empyema, and many valuable tables, illustrating various statistical points, though he remarks that disease of the liver is but a rare attendant on empyema, by his statements with reference to that organ, where its condition is mentioned, certainly confirms Mr. M'D.'s views. Some curious instances are given by Dr. Krause, of the modes in which the purulent collections are sometimes discharged. In one case, the matter made its exit through a small opening in the diaphragm, passed along the side of the lumbar vertebræ, and was discharged under the form of psoas abscess, beneath Poupart's ligament. In another, a communication was established between the intestines and the chest; and fecal matter introduced into the thorax. In reference to the artificial discharge of pleuritic effusions, and the circumstances calling for the performance of paracentesis thoracis opinions continue to be much divided. Dr. Krause is decidedly against having recourse to the operation at an early period, and considers it much more likely to be useful when the tendency to inflammation is abated.† Dr. Hamilton Roetz states, that on a review of thirty-nine cases recorded in the British journals between the years 1812 and 1842, he found that only eleven had died. Twenty-four cases fell under his own observation, the results of which led him to conclude that the operation is as free from danger as any other performed on the human body, and that it is usually successful when employed early, either in empyema or inflammatory hydrothorax: the common cause of failure being the late period at which it has been performed. His experience has led him to associate bulging of the intercostals with purulent effusion, and non-bulging with the effusion of serum. Of twenty cases, on which the observations of Dr. Hughes and Mr. Cock§ are founded, seven were completely cured; three recovered partially; nine died (six of whom were phthisical); in one the fluid was not reached by the trochar; another was sinking at the time of the operation; and in the remaining case, death occurred suddenly, (there being hydrothorax of the opposite side); one case was still under treatment. In no instance could the fatal event be said to have been hastened by the operation. In doubtful cases the use of Dr. Babington's exploratory trochar is recommended. Dr. Theophilus Thompson records a successful case after repeated punctures, in a boy æt. 5;|| and Dr. Gadechens in a boy æt. 3.\*\* Two cases are related in which electro-puncture was tried; in one a very marked and rapid absorption of the fluid took place after two or three applications of the remedy.††

*Pneumothorax.* Dr. Hughes's essay on this subject‡‡ contains a brief general history of the affection, founded on already published cases, especially those which have occurred in Guy's Hospital, with critical remarks on the more important phenomena. His principal conclusions are, that pneumothorax has not been proved to arise from other causes than a communication of the pleura with the external air;—that it may occur as a consequence of phthisis with a very small, or without any cavity in the lung;—that it may take place without the occurrence of any symptoms by which the period of the accident can be fixed;—that the greater the amount of disease in the lung, and the more extensive the adhesions of the affected side, the less marked and characteristic are the indications of the disease;—that it is not insusceptible of cure, and in some cases, of advanced phthisis, may prolong life. A very interesting case is recorded by Dr. Barker,§§ occurring in a man convalescent

\* Das Empyem u. seine Heilung, von Dr. A. Krause, 8vo; Danzig, 1844.

† Op. cit.

‡ Medical Gazette, May 3, 1844.

§ Guy's Hospital Reports, 2d Ser. No. III.

|| Medical Gazette, May 3, 1844.

\*\* Oppenheim's Zeitschrift, Dec. 1843, p. 540.

†† Gazette des Hôpitaux, 25 Mars, 1843.

‡‡ London Med. Gazette, vol. 1, 1843-4, p. 434, &c.

§§ Medical Gazette, Nov. 10, 1843.

from fever, in St. Thomas's Hospital, and in whom all the ordinary symptoms were, for a long time, masked, owing to extensive pleuritic adhesions. Fluid was found effused into the lower portion of the pleura, and a small gangrenous spot on the lower lobe of the lung from which an eschar had fallen; both lungs were otherwise healthy.

*Phthisis.* On the Statistics of Phthisis in the United States, Dr. Hayward's essay\* may be referred to, as containing the results of an investigation into the mortality from that disease, in the cities of Boston, New York, and Philadelphia, during a period of thirty years. The most striking fact shown by his tables, is the great *decrease* of deaths by consumption in those cities, especially in Boston. With a view to determine the comparative frequency and the peculiarities of phthisis in warm climates, M. Ruz† has contributed the results of his observations on the disease, at Martinique, where it appears that with the exception of phthisis, pulmonary complaints are exceedingly rare. He met with but three cases of pneumonia in five years; and chronic bronchitis even among the old is very uncommon. Of 1954 patients out of a population of 17,000, seen in the course of five years, 123 were tubercular, or 13 per cent. In those dying of phthisis, tuberculization of other organs besides the lungs is much less frequent than with us; diarrhoea very rare. Other allied scrofulous diseases are uncommon. Mr. Wells‡ remarks on the injurious influence on the phthisical patients of Malta, exerted by the scirocco and liebeccio winds from the shores of Syria and Lybia. The depressing influence of these warm winds was great on all pulmonary complaints, and incipient cases of phthisis ran rapidly into a confirmed and incurable state. The importance of chamber warmth and protecting raiment as counteracting the exciting causes of phthisis, has been insisted on by Sir George Lefevre§ as the result of his observations of the rarity of pulmonary disease in Russia. In reference to the *diagnosis* of phthisis, Dr. Hughes|| has afforded some important statistical information on its location. From the records of 250 cases, it appears that the left lung was chiefly diseased in 116, and the right in 89. The upper lobe of one or both lungs, was solely or principally diseased in 237, or 95 per cent. With these results, a paper by the same author, on the location of pneumonia,\*\* may be usefully compared. Dr. Hamernjk†† remarks that the respiration is sometimes natural in the sub-clavicular region, when there is diminished resonance. There is no difficulty in the diagnosis in such cases; but it sometimes happens that the respiratory and bronchial sounds of other diseased parts are transmitted even to the above regions, when we may be led into error. He gives a case in which all the phenomena of phthisis were present, but contradicted by the autopsy. Among other signs there were deficiency of respiration in the sub-clavicular region, and dulness on percussion. On dissection chronic catarrh and emphysema were detected, but no tubercles. Alluding to the diagnostic value of the expiratory phenomena, Mr. Wells states‡‡ that in the earliest stages, before any dulness or any general symptoms, led to the suspicion of phthisis, alteration in the intensity of the expiratory murmur excited fears of the existence of tubercles, which invariably proved well founded.

*Treatment of phthisis.* To say that nothing new or important has been advanced on the treatment of phthisis, amidst all the marvels that have been announced, some persons may think strange. Very little, however, has unfortunately appeared that can be made available for this Report. M. Max, Simon§§ opposes the notion that phthisis is a chronic pneumonia, and offers his own testimony as coinciding with that of Hufeland, to the curability of phthisis. Among other remedial means he distinguishes the ferruginous pre-

\* New England Quarterly Journal, Jan. 1843. See also on this subject, Boston Med. Journal, March 1, 1842; and Rev. Médicale, Jan. Feb. and March, 1842, par M. Briquet.

† Mém. de l'Acad. Roy. de Méd. t. x.

‡ Edinb. Med. and Surgical Journal, April 1844.

§ Lancet, vol. i, 1842-3, p. 187.

|| Guy's Hospital Reports, vol. vii.

\*\* Ibid.

†† Allg. Med. Centr. Zeitung, Nov. 9, 1842.

‡‡ Loc. cit. Report of Malta Hospital.

§§ Bulletin Gén. de Thérap. 15 et 30 April, 1843.

parations as the most powerful. He insists on their power of rendering a healthy state of organism to pallid, lymphatic persons; and in support of this quotes some of the experiments of Andral and Gavarret. He has commenced some experiments to ascertain the effects of these medicines on children during their first year, by giving iron to the mothers, and states that some pale anæmic feeble children have thus been visibly strengthened. He hints at the possibility of thus removing the congenital predisposition to tubercular disease. M. Sandras,\* in giving in his report on the Memoir of M. Pereyra of Bordeaux, on the diagnosis and treatment of phthisis,† refutes all his statements, and says that he had tried the cod-liver oil on thirty patients, many of whom took it with difficulty. In no single instance was any benefit derived. He attributes all the good which it may effect in scrofula to the iodine it contains, and which, he very justly says, it is better to give in a more simple form. [For various statements allied to those of M. Pereyra, on the treatment of phthisis by naphtha, paracentesis, &c., the reader is referred to previous numbers of this Journal, where these statements have already received sufficient notice.] Dr. Durrant‡ has called attention “to the large amount of benefit which, in a great majority of instances is to be derived from a persevering use of emetics” in the incipient stages of phthisis; a mode of treatment which has already received the sanction of more than one high authority. On the curability of tubercles in the lungs and bronchial glands, some startling, not to say incredible, statements have been made by M. Boudet to the Academy of Sciences.§ Having examined a great number of bodies without regard to the disease or the age of the patients, he finds that from one to two years of age, tubercles in the lungs or bronchial glands occur once out of 57; from two to fifteen years, in 3 out of 4; and from fifteen to seventy-six years, in 6 out of 7. In adults, therefore, the presence of tubercles is the rule, and their absence the exception! This extraordinary statement is explained by the following considerations: That in many instances, the tubercles are few, limited, and in a great number of cases, so transformed that they exert no injurious influence on the health. A favorable termination is rare in infancy; before three years of age he has met with only one example; but from three to fifteen years of age he has seen 12 instances out of 45 cases. From fifteen to seventy-six years of age he has found tubercles cured, either in the lungs or bronchial glands, in 97 out of 116 cases! In 61 of these 97 cases, “the fortunate termination appeared definite, and the rest of the organ contained no recent tubercle.” He then proceeds to point out the various modes in which these particular results are brought about, the whole merit of which is ascribed to nature.

*Phthisis from the inhalation of gritty particles.* Dr. Holland has published the results of his observations on the peculiar form of pulmonary disease to which the grinders of Sheffield are liable, and by them commonly called grinders’ asthma or rot. The disease is shown to arise from the inhalation of metallic and other gritty particles, the noxious influence of which is first exerted on the mucous membrane of the trachea and bronchi, and subsequently on the lungs. The symptoms, up to an advanced period of the affection, differ materially from those of tubercular phthisis, there being much less evidence of constitutional disturbance. Quickness of pulse, impaired digestive powers, diarrhoea, emaciation, and hectic being far less prominent symptoms, and for the most part not occurring till the very close of the disease. The local symptoms, in one class of cases, are rather those of chronic bronchitis and asthma than of ordinary phthisis, cough being for years the principal symptom. In another class the contraction and flattening of the chest, and dullness on percussion, present more of the characters of tubercular disease of the lungs, with which also the constitutional symptoms in this class more accord. In both sets of cases, according to Dr. Holland, tubercles are found in the

\* Revue Méd. March 1844, p. 450.

† Vide No. 37 of this Journal, p. 140.

‡ Medical Gazette, May and June 1843.

§ Gazette des Hôpitaux, Jan. 19, 1843.



lungs, though by no means invariably in the first class of cases. [But the structural changes are very imperfectly described, and no sufficient evidence is given of the existence of true tubercles.] On this point, as well as on some others, Mr. Waterhouse's\* account is more satisfactory. He speaks of finding "depositions of foreign matter in the air-cells, and the formation of purulent foci, and collections *resembling* tubercle." The affection is often, he says, connected with the scrofulous diathesis, and then partakes more completely of the character of phthisis. A brief account of the morbid appearances in this disease will be found in Mr. Law's Report of the Sheffield Med. Society, from which it appears that the lungs are much condensed and indurated, and studded (chiefly, and often exclusively, in the upper lobes) with *dark currant-like bodies*.†

Dr. Petrenz‡ has described the progress and nature of the pulmonary disease to which the stone quarriers of Schaudun are liable, which is clearly analogous to that occurring to the Sheffield grinders. There is the same absence, for a long time, of the constitutional symptoms characteristic of phthisis. Masses of gritty solid matter are often mixed with the expectoration. The same recklessness of life and manners which mark the grinders characterize these stone-cutters, and the cases are often modified accordingly. The disease is not hereditary. Most of the workmen die under 40. The account of the post-mortem appearances shows the marked distinction between the pulmonary destruction induced by mechanical irritation and chronic inflammation, and that which arises from the deposition of tubercle.

*Pneumonia in the old, treated without bloodletting.* Dr. V. Röderer§ remarks on the high mortality (one half to two thirds) attending the cases of pneumonia, occurring in the aged, when treated in the usual way by bloodletting, even when employed with activity from the first onset of the disease. Dr. R. has, therefore, been led to abandon bloodletting (to which he thinks the mortality in great measure attributable,) and employ tartar emetic in conjunction with opium. In the first and second stages of primitive simple pneumonia in the old, he gives from 4 to 6 grs. of tartar emetic with an equal quantity of opium, in the course of twenty-four hours, either in the form of pill or in solution. He was seldom obliged to continue this plan longer than 4 or 5 days. He abstained from all bleeding and blisters, confining himself to the above treatment, except in some rare cases where aperient enemata were required. Of forty-two patients thus treated he lost only thirteen; these were cases where the diagnosis was made with all accuracy, and the progress carefully marked. A lengthy memoir, by Mr. E. M. Martin,|| founded on sixty-seven cases, occurring during the winter of 1843, in the wards of M. Prus, at Salpêtrière, is intended to point out the chief differences between pneumonia in the adult and the aged. The apex of the lung was much more frequently the seat of the inflammation than in the adult. It was either very general or of very limited extent. Abscess was much more frequent, occurring in 3 cases out of 67; (in 5 of 70 cases detailed by Mercier at Bicêtre abscesses were found;) emphysema very frequently co-exists. The mode of invasion was sometimes gradual and sometimes sudden; but all the symptoms which attracted the patients' attention were referrible to the stomach, e. g. bilious vomiting.\*\*

*Bronchial glands.* Dr. Golding Bird†† has detailed the particulars of a case of phthisis, complicated with scrofulous disease of the cervical and bronchial glands. The patient, a girl æt. 16, presented physical indications of tubercular disease of the right lung, while, on the left side the respiration gradually became more and more feeble, without any loss of sonority, but with corresponding dyspnoea, and indications of cerebral congestion. Under these symptoms she sank, without emaciation, cough, expectoration, or any of those signs

\* Provincial Medical and Surgical Journal, Sept. 16, 1843.

† Ibid. June 12, 1844.

‡ Hufeland's Journal, April 1844, in Schmidt's Jahrbücher.

§ Oester. Med. Wochensach. Jan. 1843.

|| Révue Méd. Jan. 1844.

\*\* On the Mortality of Pneumonia as influenced by age, sex, seat, &c.; see a Paper by Professor Henderson, in Edinburgh London Monthly Journal.

†† Medical Gazette, Nov. 11, 1842.

which mark the close of ordinary cases of phthisis. From the post-mortem examination it appeared that the immediate cause of death was constriction of the left bronchus by enlarged bronchial glands, so as to prevent the ingress and egress of air to the left lung, the right being full of tubercles. Dr. Bird has met with two other similar cases. In a case related before the Med. Chir. Soc. by Dr. Graham Tice,\* the principal symptoms were dyspnea, cough, foul taste in the mouth, and subsequently stridulous breathing. Vesicular respiration disappeared on the right side completely, and partially on the left, whilst the chest sounded well on percussion. Death took place suddenly. The lungs were found healthy. The bifurcation of the trachea was surrounded by a mass of enlarged and suppurating bronchial glands, from which had been discharged a calcareous mass, that was partially engaged in the right bronchus, wholly obstructing its canal.

*Carcinoma of the lung.* Several cases of this disease have been recorded. One by MM. Lionet and Legrand,† in an old man æt. 62. The symptoms were extreme emaciation, dysphagia, percussion clear, respiration feeble, scarcely audible; no abnormal sound attending either inspiration or expiration; neither cough, hemoptysis, nor oppression; death from asthenia. The lungs, like the body, generally were atrophied, and on the summit of each was a cancerous mass, attaching the lungs to the chest by strong adhesions. The case had been mistaken for gastritis, owing to the irritability of stomach. A very similar case is detailed by Dr. MacLachlan‡ but in this instance there was eventually complete dulness of the whole right side, which appeared to move "en masse." The patient was a man æt. 62, and the disease involved the whole right lung. The diagnosis in this case was not made out. The case related by Mr. W. Clark§ was that of a man æt. 45. The symptoms at first were neuralgic pains of the chest, succeeded by cough, dyspnea, rapid pulse, hemoptysis, diminished respiratory murmur, and dulness on percussion: subsequently enlargement, distension, and immobility of the right side, displacement of the liver, and of the heart rather to the left, general venous congestion, and anasarca. The patient died, suffocated, in five or six months from the first attack of neuralgia. The lung was compressed at the posterior part of the chest by an enormous cancerous mass, occupying the whole pleura. Dr. Burrows's case|| occurred in a married woman, æt. 20. The first symptoms were pain beneath the sternum, cough, expectoration, dyspnea, and some swelling of the cervical glands. Subsequently hemoptysis and currant-juice sputa, paroxysmal cough, enlarged cervical glands and veins on the right side, and weak, husky voice. The physical examination indicated both consolidation of the lung and pleuritic effusion. Four pints of brown fluid were found in the pleura, and white, solid, suet-like masses, containing a creamy fluid, occupied the lower and middle lobes of the lung, and the right bronchus and pulmonary vein contained carcinomatous matter.

Mr. Arrowsmith\*\* has detailed a case of *pulmonary hydatids* the chief symptoms of which were cough of a paroxysmal character, no dyspnea, except after the fits of coughing; dulness over the left upper part of the thorax, then bloody sputa, dyspnea, night perspiration, and diarrhoea. The man ultimately recovered, having at different times expectorated a good many hydatids.

#### 4. DISEASES OF THE VASCULAR SYSTEM.

*Heart.* The following are the principal conclusions to which M. Aran has been led by his "researches on general pericardial adhesions."†† When entire and free from any trace of recent inflammation, the patient may be free from all suffering. Derangement of the respiratory and circulatory functions depends more on the alteration of nutrition which the heart undergoes than on the adhesions themselves. Dilatation with hypertrophy is one of the most

\* Lancet, vol. i, 1142-3.

† Lond. Med. Gazette, March 31, 1843.

‡ London Med. Gazette, p. 696, vol. i, 1843-4.

§ Gazette des Hôpitaux.

§ Med. Gazette, April 21, 1843.

\*\* Provincial Medical and Surgical Journal, Jan. 6, 1844. †† Archives Gén. de Med. 1844, p. 406.

immediate consequences of general, non-cellular, pericardial adhesion. He has never met with an instance to the contrary. The pathognomonic sign of adhesions is a *diminution or extinction of the second sound*. Three cases are given in which the diagnosis thus founded was confirmed after death. The second sound is diminished not only in clearness, but also in duration and extent, and this in proportion to the intimacy of the adhesions and the amplitude of the cavities of the heart. In old cases, it is extinct over the whole præcordial region, and even over the whole chest, so that the first sound (a little prolonged) is immediately followed by the interval of rest, also somewhat prolonged. In insufficiency of the aortic valves, the second sound is heard to the right of the heart; and at the posterior part of the chest, and over the præcordial region, it is replaced by a prolonged and sometimes musical blowing sound ("bruit de soufflet aspiratif"). He explains the diminution or extinction of the second sound by referring to the impediments existing to the heart's free action, and the consequent imperfect dilatation and contraction of the ventricle, in which circumstances neither the usual shock of the return of the column of blood on the aortic valves, nor the return of the fibres of the ventricle to their passive state, can occur with sufficient force to produce the second sound. Professor Forget\* is unable to lay down any constant or invariable sign of general adhesion, and has never met with the epigastric depression during the systole, described by M. Sandras. The presumed relation between adhesions and hypertrophy he thinks rational, but requires confirmation, and that it is not proved that adhesions alone, when old, may not produce dropsy and death, by long-continued impediment to the heart's action.

*Hypertrophy of the left ventricle in old people.* M. Dubrueil† thinks that in many cases dilatation of the aorta is the consequence of the loss of elasticity of the vessels which attends old age, and that this loss of elasticity explains why hypertrophy should be the almost constant attendant on aortic aneurism. When the movement communicated to the blood by the arteries is enfeebled in consequence of their morbid condition, the heart compensates for it by increased action, which after a time induces hypertrophy. Hence, in most old persons, we find that hypertrophy of the left ventricle coincides with ossification (?) of the vessels, when this occupies a certain extent of the arterial system.

M. Fauvel‡ in a memoir entitled 'On the Stethoscopic Signs of *narrowing of the left Auriculo-ventricular Opening*,' after noticing the different existing opinions, states that he had observed the abnormal sound, attending the first sound of the heart, in certain cases, to precede the impulse. In consequence of the occurrence of some cases, the details of which are given, his attention was more closely directed to this subject, and he has been led to the conclusion that a "bruit de râpe," situated at the apex of the heart, to the left, and immediately preceding the first normal sound, may be the only morbid sound corresponding to very considerable narrowing of the left auriculo-ventricular orifice, without valvular insufficiency. This præstolic abnormal sound corresponds with the contraction of the auricle at the moment the blood is driven into the ventricle, across the diminished orifice, and therefore situated as it is, at the apex of the heart, to the left, it is the *most probable* stethoscopic indication of narrowing of the mitral valves.§ Dr. Hamernjk|| attempts to show that inflammation of the substance of the heart is much more frequent than has been thought, since the alteration of tissue consequent on fibrinous exudation is only to be detected by the microscope; by the naked eye it may be confounded with fatty degeneration. When the fibres connected with the mitral or tricuspid valves are thus altered by inflammatory exudation into their substance, they cannot contract with sufficient force, and thus the phenomena

\* Gazette Médicale, April 1844.

† Observations sur les Aneurismes, &c., par J. Dubrueil; 8vo, Montpellier, 1842. Gazette M.d. Sept. 17, 1842.

‡ Archives Générales de Méd. Jan. 1843.

§ M. Aran coincides with these views. Vide Arch. Gen. de Méd. Nov. 1842.

|| Oesterreich. Méd. Jahrbüch. July and Aug. 1843.

of *valvular insufficiency* may be induced. He gives a case in which the musculi papillares of the mitral valve were found atrophied, flattened, and to a great extent converted into cellulo fibrous tissue, from infiltration of lymph. Mr. Moore O'Ferrall remarks that uncomplicated obstruction of the aperture is not necessarily attended by a murmur; that this may disappear after a time, and that the diagnosis can be made only by the observation that a well-marked systolic murmur had previously existed in combination with the general symptoms of the disease.\*

*Hydro-pneumo-pericardium.* An example of this form of disease is given by M. Bricheteau,† in which fluctuation of liquid in the pericardium, coinciding with each beat of the heart, was perceptible by the ear during life, and resembled the flap of a paddle against the water. The pericardium was found after death greatly distended, and being punctured, gave exit, with audible sound, to a quantity of fetid gas, and a considerable quantity of very fetid sero-purulent fluid. (Bricheteau has referred to authorities, and finds his case almost unique, the only complete case of the kind.)

*Digitalis, in certain diseases of the heart.* Professor William Henderson‡ confirms the observations of Dr. Corrigan (Ed. Med. and Surg. Journal), that in a permanently patent state of the aortic valves, the prolonged use of digitalis is injurious, inasmuch as frequent contractions of the heart are, in this state, necessary to overcome the tendency to regurgitation, the cause of the hypertrophy. On the other hand, in diseases of the left auriculo-ventricular valves, increased frequency of the heart's pulsations increases the dyspnea, and the symptoms consequent on obstructed circulation, partly in consequence of the hypertrophy of the right ventricle, and partly owing to what takes place at the diseased orifice. If this be merely narrowed, more frequent closing of the valves will increase the impediments to the onward course of the blood, and if in a patent state, will augment the regurgitation—in either case increasing the dyspnea. Hence digitalis, by diminishing the frequency of the heart's pulsation in this form of disease is beneficial in diminishing the dyspnea and augmenting the size and force of the pulse, which from being small and feeble, will become full and firm, when the medicine has reduced the heart's contractions to 40 or 50 per minute. M. Debreyne§ has derived the best effects from the following plan of treatment in organic affections of the heart, excepting in cases where the pulse is very slow or feeble, while the extremities are cold, asphyxia imminent, the countenance livid, and the swelling considerable. "After local or general bleeding, or leeches to the anus, according to circumstances," he prescribes tincture of digitalis in gradually augmented doses, and with each dose, dissolved in the same vehicle with it, 3j of nitrate of potash. The medicines produce no good effect unless given in doses sufficient to cause nausea and vertigo. The sedative power of nitrate of potash on the heart he considers proved by Aran's researches.

## 5. DISEASES OF THE NERVOUS SYSTEM.

*Cerebral Auscultation.* Dr. Whitney,|| of Newton, Massachusetts, states that in ausculting the heads of healthy children, four distinct sounds are heard, produced respectively by the acts of respiration and deglutition, and by the voice and action of the heart; these are sometimes so altered in character in diseases of the encephalon, as to become symptoms of cerebral disease. A cephalic bellows-sound, or modification of the natural sound of the heart, is heard in various diseases. It has been noticed in cerebral congestion and inflammation, hydrocephalus, compression of the brain, ossification of the arteries, and the hydronephaloid disease. Encephalic, or cerebral oëgophony, has been noticed only in cases attended with effusion and extravasation in and about

\* Dublin Journal of Medical Sciences, July, 1843, p. 418.

† Archives Gén. de Méd., March, 1844, p. 334; par M. Bricheteau, Médecin de l'Hôpital Necker.

‡ Northern Journal of Medicine, May 1844.

§ Bull. Gén. de Thérapeut. 15 et 39 Dec. 1843.

|| American Journal of Med. Sciences, Oct. 1843.

the substance of the brain. A purring thrill has been heard in aneurism of the basilar artery, and a cooing or musical sound is considered pathognomonic of anæmia of the brain.

*Cerebro-spinal meningitis, epidemic.\** During the last few years a terrible disease has prevailed in different towns in France, attacking principally the common soldiers of the garrisons of these towns, namely Versailles, Lyons, Avignon, Bayonne, Givet, Metz, Strasbourg, Nancy, and more recently in other localities. M. Faure Villart† has described the disease as it prevailed at Versailles. M. Gassaudo‡ has given a very similar account of its characters as it appeared at Bordeaux. M. Gasté§ has published his experience of the disease at Metz, in 1840; MM. Forget and Tourdes|| have observed it at Strasbourg; and M. Chauffard\*\* at Avignon. Lastly, M. Rollet†† describes its appearance at Nancy. The symptoms resemble very closely those of inflammation of the membranes of the brain and spinal cord in sporadic cases. According to M. Rollet, the disease occurs in two forms; in the one which he denominates "méningite encéphalo-rachidienne," there are no signs of lesion of the nervous centres themselves; no affection of sensation or motion; though there are all the symptoms of inflammation of the membranes; at first, rigors, then malaise, tinnitus aurium, vertigo, violent pain in the head, extending along the vertebral column; agitation or restlessness, and slight delirium and moderate fever, or absence of fever. In the second form there is affection of the intellectual faculties, and also of the functions of motion and sensation, and more or less complete abolition of all the senses. This form of the disease is illustrated by the following case: "When the patient was admitted into the hospital, the face was dusky, (cyanosé,) the eyes fixed; the sclerotics injected; the pupils dilated and insensible to the action of light; there were furious delirium; wild cries; constant movements of the limbs; trismus; retraction of the head backwards, and marked diminution of sensibility; the skin was rather warmer than natural; the pulse 80, full, and hard; the tongue dry, and red at the tip; and the patient scarcely able to protrude it from the mouth. The next day there was profound stupor, nearly complete deafness; unintelligible muttering elicited by questions, and complete loss of sensibility. Death took place on the third day. The patient had been bled twice; forty-six leeches had been applied, and an *oryzari* to the forehead. *Autopsy.* The cerebral arachnoid was very vascular; and upon the whole surface of the pia mater and the brain there was a layer of purulent plastic matter; and a considerable collection of this matter at the base of the brain, about the pons varolii and medulla oblongata. The cerebrum was slightly punctated but not softened. The choroid plexus injected: the cerebellum softened; and the arbor vitæ of a blood-red colour. Beneath the spinal arachnoid there was the same kind of purulent matter as was observed beneath the cerebral arachnoid, and opposite the third dorsal vertebra, a considerable collection of pus, and also about eight grammes opposite the last dorsal vertebra. The substance of the spinal cord appeared healthy." The lesions here described are exactly the same as those mentioned by MM. Faure-Villar, Chauffard, and Forget. Morbid changes from inflammation have also been observed in the alimentary canal, but M. Rollet regards them as mere accidental coincidents, while M. Forget attaches great importance to them. Again, M. Villar noticed that lumbricoid worms were very frequently found in the intestinal canal in fatal cases, in 42

\* Rapport sur une Mémoire de Cérébro-rachidienne et de l'encephalo-méningite épidémique, par M. Rollet, Médecin en chef de l'Hôpital Militaire de Nancy. (M. Ferrus, rapporteur.) Bulletin de l'Acad. Roy. de Méd. Oct. 15, 1849, t. viii, p. 43.

† Mémoires de Médecine et de Chirurgie Militaires, 1840, t. xlviii.

‡ Ibid.

§ In a tract entitled Mélanges de Médecine.

|| Relation de l'Epidémie de Méningite Encéphalo-rachidienne observée à Strasbourg, par M. Forget. Paris, 1842. Hist. de l'Epidémie de Méningite Cérébro-spinale, observée à Strasbourg en 1840-41, by M. Gabriel Tourdes, Paris, 8vo, 1842.

\*\* Mémoire sur les cérébro-spinites qui ont régné en 1840 et 1841. Revue Médicale, Mai 1842.

†† Sixième Observation de M. Rollet.

out of 56; and M. Gassaud cites cases in which they passed from the patient during life. But M. Rollet observed this complication only twice at Nancy. He remarks, that in those cases in which the substance of the brain is affected, there is an almost continual tendency to intermission, or at least remission, which alternates about every three hours with an exacerbation, but he regards this merely as characteristic of the encephalo-meningitis, not as an evidence of the disease being of the nature of remittent fever, which is the view taken by M. Gassaud.

With regard to *treatment*, M. Faure-Villar tried all rational methods, but declares that none seemed superior to the rest. Out of 154 cases which he treated, 66 terminated fatally. M. Gassaud, who regarded the disease as a "fièvre céphalalgique subintrante," produced by marsh miasm, affirms that, of 162 soldiers attacked only two died when he had begun to treat them with medium doses of sulphate of quinine, at the same time that he employed purges, and at the commencement, venesection. M. Forget recommends the antiphlogistic plan of treatment at the commencement of the disease, and afterwards opium. Of 40 cases, however, he lost 24. M. Chauffard failed to cure the malady by antiphlogistic means, the most prompt, direct, and energetic; by revulsives, purgatives, calomel, and also by various tonics. Opium triumphed over it. But it was necessary to give it in large doses. The medicine most advantageously combined with opium was the sulphate of quinine. Before this plan was adopted, only 1 case was cured out of 30; afterwards the disease was less fatal than it ordinarily is in sporadic cases. Lastly, M. Rollet found that all the cases of simple cerebro-spinal meningitis, (that is to say, of inflammation of the membranes without lesion of the nervous centres themselves,) yielded to simple but energetic antiphlogistic treatment, or at most to this treatment aided by counter-irritants to the skin. One remedy only could control the more violent cases of encéphalo-meningitis, when the brain and spinal cord also suffered, and this was cauterization. (In one case which is detailed, the actual cautery was applied at twelve distinct spots along the spine, beside counter-irritants.) M. Tourdes states that, of 195 soldiers attacked, 122 died. He agrees with M. Chauffard that bleeding, tartar emetic, mercurials, refrigerants, and revulsives, were of no avail; but he cannot confirm all that Chauffard has said in favour of opium.

Dr. Gillkrest,\* in a Report to Sir James M'Grigor, has described a similar epidemic which prevailed among the civil population of Gibraltar from January to May 1, 1844. Of 16,000 inhabitants 450 were attacked, of whom 190 had symptoms of more or less gravity, and 42 died. The majority of the cases occurred between two and fifteen years of age, and few only were attacked in a severe form above the age of thirty. With but few exceptions the disease prevailed among the indigent classes. "There is no question" says Dr. G. "of the identity of the symptoms in our cases, with those described in the Versailles epidemic." No special atmospheric peculiarities could be assigned as its cause. Previous to its breaking out, an epidemical catarrh which had prevailed, declined; and before its setting in, as well as during its prevalence, "it was remarked that in indispositions of any kind, there was a tendency to headache more or less severe, the occiput being oftener than usual the seat of pain, and the muscles of the back of the neck being affected with aching." No opportunity was afforded of examining the head of a single child; in the adult cases the dura mater was always found free, but the arachnoid and pia mater exhibited the most unequivocal marks of inflammation, especially at the base of the brain, where pus as well as lymph, was frequently found. The ventricles in some instances contained large quantities of serum, lymph, and pus. Mercury and the ordinary antiphlogistic means constituted the treatment.

Several cases of *sporadic spinal meningitis* presenting many points of in-

terest, have been recorded. One by Dr. Eitner, fatal in four days.\* Professor Wagnert has detailed a remarkable case in which universal suppuration of the cerebro-spinal membranes existed without any corresponding symptoms, which were those of gastric derangement, till two days preceding death, when convulsions occurred. There was general softening of the brain and spinal cord.† Dr. Drazic has reported a case occurring under the care of Prof. Skoda, in which there was general paralysis of the voluntary muscles, without any loss of sensation or affection of the sensorium. The day before death there was profuse sweating, paralysis of the diaphragm, dyspnea, with general mucous rhonchus (but no paralysis of the bladder), and subsequently trismus and convulsive movements of the muscles of the face. The brain was found to be natural. Between the membranes of the cord was a little grayish clear serum; the whole spinal cord was somewhat atrophied as well as the roots of the motor nerves, the upper ones especially being soft. The substance of the cord was generally pale and firm.§

*Apoplexy, contraction of the limbs in.* M. Durand Fardel|| has investigated that condition of the muscles occurring in hemiplegia, in which though deprived of voluntary motion, contraction to a greater or less extent, either temporary or more permanent occurs. From his researches he concludes, that in cerebral hemorrhage contraction of the paralysed or non-paralysed limbs, almost invariably accompanies the rupture of the apoplectic cavity into the ventricles or between the membranes; that contraction rarely attends hemorrhage limited to the substance of the hemispheres; and, lastly, that contraction is a very frequent symptom in cerebral hemorrhage.

The object of Dr. Mayo's Lumleian Lectures\*\* is to illustrate the views of Dr. Kirkland respecting "those cases of apoplexy in which vascular plethora, congestion, or extravasation, has not occasioned the attack." "They are all marked by suddenness of invasion, but some are more vehement, others milder"—"suddenness of invasion, and the absence of evidence of prior arterial excitement, or effusion, are the diagnostics on which Dr. Kirkland principally relies, as identifying his nervous apoplexy. It may coexist with, or be promptly followed by sanguineous or serous effusion; but these are not its causes." To illustrate the character of this form of apoplexy Dr. Mayo relates 5 cases (one original,) and remarks on the absence of any evidence of antecedent vascular fulness or effusion, and that the two cases which terminated most favorably were those in which the treatment had been most sedative. He then proceeds to illustrate Dr. Kirkland's views in relation to the paralytic affections which are "not brought on by compression, supuration, or any mechanical cause," and which are described as "spontaneous or true palsy from sudden loss of nervous power." Dr. Mayo, however, considers that in the treatment of the 'apoplexia nervosa gravior' Dr. Kirkland has pushed his principles too far, and that this form may tolerate and even require more depletion than even cases of presumed extravasation. He suggests the hypothesis that the vital power is not, as Dr. Kirkland supposed, destroyed, "but under a temporary interruption." Meanwhile the heart continuing to perform its functions, this supposition would imply a subsequent danger of congestion a tergo and a liability to rupture; so that though no arterial action or sanguineous extravasation should precede or accompany it, the case may require the same treatment in kind, as such phenomena would have indicated. M. Gay (in 1808) attempted to show that no such disease as sanguineous apoplexy exists, that bleeding is injurious in all cases of apoplexy, but that emetics are indicated in every case. His essay has been translated by

\* Med. Zeitung, 21 Dec. 1843.

† See also Arch. Gén. de Méd. Fev. 1843. Epinière, etc., par M. Gérard, de Marseilles.  
‡ Archives Gén. de Médecine, 1843, p. 300.  
§ Dr. Max. Durand Fardel.

|| Oesterreich. Med. Wochens. Nov. 4, 1843.

¶ Observation d'un Cas remarquable d'affection de la Moelle  
§ Oesterreich. Méd. Wochens. Jan. 31, 1843.

|| De la Contraction dans l'Hémorrhagie Cérébrale, par  
\*\* Med. Gazette, Nov. 11 and 25, and Dec. 2, 1843.

Mr. Copeman, who has appended some observations on the subject of bleeding in apoplexy.\* Dr. T. Reinbold† thinks that few cases of apoplexy are benefited by large bleeding, but that small doses of from  $\text{ʒij}$  to  $\text{ʒiv}$  are useful in assisting the brain to recover its powers.‡

*Hemiplegia from obstructed circulation.* Three cases of great interest, have been recorded, in which hemiplegia was induced by sudden obstruction to the arterial circulation within the cranium; in two instances occasioned by ligature of the carotid artery, and in the third by the consequences of dissecting aneurism of the aorta. M. Sedillot§ tied the common carotid to arrest hemorrhage from a wound behind the right branch of the lower jaw. Complete hemiplegia of the right side of the face and of the left side of the body followed the operation, and the patient was deprived of intelligence so far as scarcely to be able to comprehend questions put to him. He died nine days after the operation, and the right side of the brain was found somewhat diminished in consistency, and deprived of its due proportion of arterial blood. In Dr. Fairfax's case, hemiplegia of the opposite arm and leg followed a similar operation, but there was no paralysis of the face.|| The case related by Dr. Todd\*\* presents many points of interest. A stout plethoric man, æt. 37, was suddenly seized with syncope and afterwards complained of violent pain in the loins, along the course of the ureters, thighs, and abdomen, attended with some tympanitic swelling, nausea, and scanty urine. Despite of treatment the kidneys ceased to act; hemiplegia of the left side succeeded; feebleness of pulse of the right side; bellows-murmur in the course of the aorta and innominata; feebleness of respiration in the right lung; drowsiness and sluggishness. About the fifth or sixth day the secretion of urine returned, the pupils which had been unequal became equal, and some power of the paralyzed side was regained. Signs of internal hemorrhage however came on, and the man died suddenly on the eleventh day from the seizure. A copious effusion of blood was found in the pericardium derived from a small aneurismal sac, communicating with the aorta. From this spot the blood had formed a new channel for itself, splitting up the middle coat along the aorta and innominata, and the right carotid for some distance, and then plugging up the latter vessel, and arresting the circulation through it. The right hemisphere of the brain was found exsanguineous, and all that part above the fissure of Sylvius (supplied with blood by the middle cerebral artery) exhibited numerous patches of softening, without discoloration, implicating the white as well as the gray matter. [A case was recorded some time ago, by Mr. Vincent, in which the patient died on the seventh day after ligature of the right carotid, with hemiplegia of the left side. Pale softening of the right hemisphere was discovered after death. Such cases, independently of their important practical bearing, are deserving the attention of those who would refer softening of the brain in all cases, either to inflammation or post-mortem changes.]

*Hemiplegia connected with syphilis.* In the 'Medical Gazette' for May 27, 1842, Dr. Budd called attention to some cases of paralysis concurrent with, or depending on the presence of the syphilitic virus in the system. Mr. Inman†† has since met with five similar cases. A fatal case has been published by Dr. Todd, where the post-mortem examination revealed inflammation of one cerebral hemisphere, and red softening of the other. In sup-

\* Essay on the Nature and Treatment of Apoplexy, by M. Gay. Translated by E. Copeman, esq. with an Appendix; London, 1843.

† Ueber d. Schlagfluss von Dr. Th. Reinbold, Hanover; in Schmidt's Jahrbücher, No. 3, 1844.

‡ As a counterpart to certain recent modes of treating phthisis by paracentesis, the following almost equally rational proposition may amuse the reader: M. Claudius Barbier, of Lyons, after adducing (as though he believed it original) the hypothesis of the unalterable fulness of the cerebral vessels, to show the futility of bleeding in apoplexy, gravely proposes the application of the trephine before having recourse to venesection!! He does not, however, appear as yet to have put his notable project into execution. Journal des Conn. Méd. July 1843.

§ Gazette Médicale, Sept. 3, 1842.

|| Medical Gazette, p. 351. Vol. i, 1843-4.

\*\* Trans. of the Med. and Chir. Society.

†† London Medical Gazette, July 21, 1843.



port of the view that these are not mere coincidences, Mr. Inman remarks that in all his cases, as well as in the four related by Dr. Budd, and in Dr. Todd's case, the patients were under forty years of age, whilst ordinarily apoplexy attacks only persons who have passed that age. [The author of this Report met with a case, some years ago, where an apoplectic attack, followed by hemiplegia, occurred in a young man *set.* 24, who was at the time suffering from secondary symptoms for which he had been taking mercury. As the hemiplegia of one side gradually disappeared, the opposite side became affected, but ultimately the patient recovered.]

*Paraplegia.* Sir B. Brodie\* states that in chronic affections of the spinal cord, producing paraplegia, &c., the treatment must, to a certain extent, be empirical; but that he has never seen any beneficial results from the use of counter-irritation. On the contrary, he has often seen it productive of mischief. It is essential that the bowels should be kept open, and that the black tary secretions which take place, should be got rid of. For this purpose he recommends pills consisting of compound extr. of colocynth, with croton oil. The treatment he has found most successful consists of the exhibition of pills containing gr. j. zinci sulphatis, thrice a day, with a draught containing mxx tinct. cantharidis. These should be persevered in for some time, gradually increasing the dose, but not to any great extent. In other cases, he has seen small doses of bichloride of mercury useful, which does not, he thinks, act as mercury, but much in the same way as sulphate of zinc. Mr. Gorham† and Dr. Badeley‡ have each reported a case of paraplegia, in which the recovery was attributed to strychnia.

*Paralysis treated by electro-galvanism.* Several cases of paralysis have been related where the cure was attributed to electro-galvanism; one of complete paralysis of the œsophagus of long standing, followed by hemiplegia; the particulars of which are detailed by Sir A. Knight,§ a second, of hemiplegia of three years' standing, described by Dr. Martin Lynch;¶ a third, of complete paraplegia succeeding to ptosis and amaurosis, which had been treated by mercury to a considerable extent, recorded by Mr. Howell, of Clapton. In this case, however, the cure was not complete, and the electro-galvanism was conjoined with quinine, iron, and tonics.\*\*

*Hydrocephalus in youth.* Dr. Henry Kennedy†† concludes a paper "On Hydrocephalus which occurs at a particular period of life," by throwing into a set of propositions the different points to which his attention has been drawn. That an affection of the brain of the hydrocephalic character is not at all unfrequently met with between the ages of twelve and twenty-five years. That it is more common in females than males, in the proportion of two to one. That in the majority of cases it commences with symptoms of mild fever. That it sometimes begins by a distinct complaint of the head, for some days, the patient being still able to go about. That when the disease commences by fever, the first signs of anything going wrong take place very commonly at night; and a marked increase of fever may then be observed. That during the progress of the disease the pulse exhibits the characters of hydrocephalus, and to a marked degree. That alterations about the eye (strabismus, &c.,) are often among the earliest symptoms, pointing out that mischief is coming. That the pathology of the affection is confined in great part to the arachnoid at the base of the brain, with more or less effusion into the ventricles. That there are grounds for supposing the inflammation to be of a specific character, probably strumous. That when the affection has fully declared itself, the treatment has yet to be determined; but local bleedings, with mercury and blisters, hold out the best prospect of success. In connexion with this subject

\* Lancet, vol. i, 1843-4, p. 437.

† Ib. May 11, 1844.

‡ Medical Gazette, July 12, 1844.

§ Dublin Med. Press, March 29, 1843; from Provincial Medical and Surgical Journal.

¶ Provincial Med. and Surg. Journal, March 23, 1844.

\*\* Med. Gazette, vol. i, 1843-4, p. 481.

†† Dublin Journal of Med. Science, July 1843, p. 382.

some observations have been given by Dr. J. B. S. Jackson,\* entitled 'Tubercular Meningitis in the Adult.'

*Epilepsy.* M. Leuret† having always under his care, 100 or more male epileptics, has given the results of his researches on the causes, symptoms, course, and termination of epilepsy. Among predisposing causes, his tables show that adolescence must be ranked, and as young children are often carried off by early attacks, and few admitted into hospital, he considers childhood also a predisposing cause. Hereditary predisposition could be traced in 7 only of 106 cases. In reference to the real or presumed causes, of the 106, 39 could not assign even a probable cause, but of the remainder 35 assigned fear; 12 onanism; 6 drunkenness; 2 anger; and 2 falls. M. Leuret thinks the influence of the depressing passion of fear cannot be questioned. Seven cases are detailed in illustration, and great stress laid on the danger of exposing children to the influence of fear, as of all causes of epilepsy this he thinks the best established. In 82 of the 106, the attacks occurred at regular periods, and then were rarely single, but recurred frequently for twelve or twenty-four hours. The latter cases are often quickly fatal. In reference to the influence of season, the tables indicate that cold is injurious, and heat favorable. The relation of the moon's changes to 70 cases watched through the whole year, show that this luminary exerts no influence whatever on the course of epilepsy. The electric state of the atmosphere is not without influence; the attacks being more frequent in stormy weather. Intemperance and onanism are frequent causes of the return of an attack. Those in whom the seizures have observed regular periods, suffer in various ways if at the regular time they have not an attack.

A case is related by Dr. Parrish,‡ in which an epileptic paroxysm immediately succeeded to a blow on the head. After a lapse of eight months the disease returned, the attacks became frequent, and were immediately preceded by severe shooting pains over the seat of the original injury, though no pain was complained of at other times. This spot was tender, and firm pressure excited severe pain and general nervous agitation. An incision was made over the tender portion of the scalp, an issue established and kept up for seven weeks, when the soreness had entirely disappeared. From this time the patient had no return of the disease. Dr. William Heise,§ of the Connaught Lunatic Asylum, states, that an epileptic lunatic who had received a severe wound of the head, with fracture of the skull, was from that time cured of his epilepsy and restored to reason.

In *epilepsy and epileptical mania*, Dr. Sharkey|| thinks there is a particular tolerance of digitalis, which acts as a pure sedative; the characteristic effects on the circulation being manifested in the course of twenty-four or forty-eight hours. He gives the tincture in doses of from ʒij to ʒss, and has detailed two cases of mania associated with epilepsy, and one of maniacal excitement in which marked benefit followed large doses of this medicine. In another case of epilepsy, great tolerance of the remedy was manifested, and relief obtained, with sound sleep and subsidence of the excitement. [In a case in which, on the periodic return of epileptic attacks, the patient is scarcely free from the paroxysms for twenty-four hours, the Reporter has tried the effects of digitalis in doses of 40 min. every three or four hours, on three occasions, with, apparently, considerable benefit.] Dr. Baretti\*\* has detailed four cases of epilepsy successfully treated by the valerianate of zinc. Dr. Debreque†† has found the extract of belladonna by far the most successful remedy when there are no symptoms of cerebral congestion. When the paroxysms occur at long intervals, the belladonna is administered for a week or two before the

\* New England Quarterly Journal of Medicine and Surgery, Oct. 1842.

† Archives Gén. de Méd. 1843, p. 32. Recherches sur l'Epilepsie, par M. Leuret, de Bicêtre.

‡ Philadelphia Examiner, vol. vi, No. 2.

§ Dublin Medical Press, Sept. 6, 1843.

|| Medical Gazette, vol. i, 1843-4, p. 305, and vol. ii, p. 340.

\*\* Bollettino delle Scienze Mediche, Feb. and March, 1844, p. 121.

†† Thérapeutique appliquée, &c. par P. J. C. Debreque, 3de Ed. 1844.

expected invasion, and if preceded by a distinct aura, a strong dose of ammonia is recommended, as serving to ward off the paroxysm.

*Delirium tremens.* The following remarkable case of delirium tremens, is given by Mr. S. Flood, in which, after trying opium fully, with tartar emetic, digitalis, &c., without effect, belladonna was employed in the following way. A large blister having been applied between the scapulæ, the cuticle was stripped off, three inches long and two wide, and a plaster of pure extract of belladonna applied to the denuded surface. The man was, at the time, in a state of furious delirium, with contracted pupils, pulse 110, weak, and very irritable; and had not slept for 360 hours. So acute was the pain produced by the plaster, that he was instantly subdued; and entreated its immediate removal. In three minutes he ceased to complain; in five minutes there were slight twitchings of the muscles of the face and arms, his utterance became indistinct, he kept up a stupified laugh like a man much intoxicated; the pupils began rapidly to dilate, and in seven minutes were open to their fullest extent. He now became very drowsy and begged to lie down; the belladonna therefore, was sponged off, simple ointment applied, and he then fell back on his pillow, and in nine minutes from the first application was in a profound sleep, which lasted for seven hours. During the sleep, which was free from stertor, the pulse fluctuated remarkably. At the commencement it was 110, small and irritable; in five minutes it rose to 140; and in twenty minutes to 160; then gradually fell, till at the end of six hours, it had sunk to 108, and was full and soft. At the end of seven hours he awoke quite quiet, but after staring about him in stupified astonishment, soon relapsed into his former state of wildness. Opiates were now tried again in large doses, but without effect, and as he was apparently sinking from prolonged excitement, belladonna was applied, in the same way, a second time, two days after the first application. The same chain of phenomena followed, and sound sleep was induced, which continued for nine hours and a half. On the following day, belladonna was a third time applied, but to the same surface; from this time he gradually improved. Dr. Fosgate recommends the union of ammonia with opium, not only as aiding to sustain the powers of the system, but also as modifying the influence of opium, diminishing its poisonous and increasing its therapeutic action.

*Affections of the brain and spinal cord, connected with acute cardiac diseases.* The dependence of certain affections of the brain and spinal cord on acute disease of the heart, now very generally admitted, has been farther illustrated in the Lumleian lectures of Dr. G. Burrows.† From various sources he has collected sixteen cases: 1, some having all the usual symptoms of inflammation of the brain and its membranes; 2, cases simulating mania and dementia; 3, others characterized by apoplectic and epileptic symptoms; 4, another class with well-marked symptoms of tetanus and trismus; and five others, presenting symptoms of aggravated hysteria and chorea. It has been supposed that such cases are only met with in connexion with rheumatism, and especially when pericarditis is ingrafted on articular rheumatism; but of the cases collected by Dr. Burrows no rheumatic affection could be discovered in six. In the twelve fatal cases no trace of disease could be detected, in either the brain or its membranes, a fact opposed to the supposition that metastasis is the cause of the symptoms. Dr. Burrows coincides with Dr. Bright's opinion, that the nervous symptoms are of the same character as those produced by irritation of the gums.

*Chorea.* A case of chorea, occurring in a girl æt. 16, is related by M. Trouseau,§ the fatal termination of which will not surprise British practitioners. The girl had had two previous attacks, which are said to have ceded to the use of strychnia. The disease, however, returned after a fright, and in an

\* *Lancet*, vol. ii, 1842-3, p. 12. Vide also *Ibid.* p. 897, for further remarks on the action of Belladonna.

† *American Journal of Medical Sciences*, Jan. 1844.

‡ *Medical Gazette*, May 26, 1843.

§ *Bulletin. Gen. de Thérap.* t. xxv, p. 226.

aggravated form, the symptoms being very severe, and attended by violent convulsive movements of the trunk, and opisthotonos. Strychnia was again tried, and persevered with for four days, but failed to afford any relief. Morphia was then tried, but the symptoms became more and more aggravated and terrible, till the third day, when death occurred. The brain and spinal cord were carefully examined, but nothing whatever abnormal was detected. [Purgatives seem never to have been mentioned, or thought of.] M. Rougier,\* however, details ten cases, in children, successfully treated by strychnia. In all, the disease was at first exasperated. In the majority, tetanic convulsions occurred, sometimes of a very alarming character, but always allayed by drinking a glass of cold water! To be successful, M. Rougier thinks the remedy must, in the first instance, either produce tetanic symptoms, or sensibly augment the involuntary movements.

In anæmic cases, after exhibiting purgatives and iron† Dr. Hildreth gives full doses of sulphate of quinine. Cases presenting indications of cerebral determination and congestion, are considered unfit for this treatment. Dr. H. also strongly recommends the *cimicifuga racemosa*, in doses of 3j—3ij of the saturated tincture, or a strong decoction with spices and brandy. Four cases of a convulsive disease allied to chorea have been recorded in the American Journals, under the name of "*salaam convulsion*." One occurred in the person of a boy æt. 6, and is detailed by Dr. Ezra P. Bennett.‡ In January 1842, the lad had a slight attack, marked by sudden convulsive action of the right leg and thigh, followed by temporary loss of motion. A month afterwards the disease returned in a severer form, presenting the following characters: "The leg and arm of the right side were in a state of tonic spasm, the left leg and arm in constant motion of flexion and extension, and his head in violent motion backwards and forwards, as far as it could possibly go." The spasms were violent, lasted from two to three minutes, were productive of severe pain, and left him paralysed. He was perfectly conscious. Purgatives, blisters, the warm bath, and cordials were of no benefit. Two grains of opium every two hours produced some alleviation and some sleep. Strychnine in doses of  $\frac{1}{10}$  gr. augmented the spasms to such a degree as to endanger the boy's life. Two large blisters along the spine, at first augmented, but subsequently relieved the spasms. The little girl, æt. 7, whose case Dr. Barton§ records, was seized every few hours with spasmodic jerking of the extremities forwards, and a bowing of the head, with instantaneous relaxation, repeated at intervals of a few seconds, and accompanied with a quick expiration and noise, such as would be produced by a blow on the epigastrium. She was cured by purgatives. This peculiar nodding motion of the head has given the name of "*salaam convulsion*" to the disease.

*Catalepsy. Thirteen years' standing.* Professor Huss, of Stockholm,|| states that a woman, æt. 30, at the age of 12 was suddenly deprived of consciousness, to which succeeded loss of speech and hemiplegia of the right side, lasting a year. She then recovered, and menstruated at 17; after which she became subject to attacks, during which "she became stiff as a poker," preserving the position in which the attacks found her. They began with palpitations and tinnitus aurium, the eyelids being spasmodically closed; but when opened, the pupils were dilated; the limbs were extended, and to the patient felt stiff, though easily bent by the observers, but retained the position in which they were placed; the neck was bent back, the face red, but the features unaltered; the carotids beat strongly. After some minutes she heaved several deep inspirations, and gradually recovered. Consciousness was retained during the attacks, but she could neither hear, nor speak, nor feel when touched. She recovered by treatment directed to restore the catamenial functions and the use of the

\* Journal de Méd. de Lyons, July 1843.

† American Journal of Med. Sciences, Jan. 1843.

‡ American Journal of Med. Sciences, April 1843. § Ibid. Jan. 1843.

|| Gazette Méd. de Paris, Feb. 4, 1844.

sesquic. ferri. The catalepsy was unassociated with any exstastic or other peculiar psychological phenomena, and was manifestly connected with the uterine derangement.

*Hydrophobia.* M. Dupuy\* has related to the Acad. of Med. the history of a case, where a person bitten by a mad dog escaped hydrophobia by having the wound freely cauterized. At the same meeting it was stated that at Martinique, 18 individuals were bitten by mad dogs during one year; that 17 of these had their wounds freely cauterized, and did not afterwards suffer; but that the 18th, who did not submit to this operation, was seized with hydrophobia. M. Lerou, of Dijon, has also announced, as the result of his experience, that in that town, all who had been bitten by mad dogs and had their wounds freely cauterized, have escaped, whilst all those who were not so treated have fallen victims to hydrophobia. M. Robert,† who distinguishes between hydrophobia and true rabies, thinks the latter (often accompanied by the former) is never cured. He has detailed minutely the post-mortem appearances of a fatal case, occurring to a girl æt. 12. These exhibit nothing unusual, except that the blood was extremely pale and not coagulated, and the inferior two thirds of the spinal cord much softened.

M. Allier, recollecting the power of compression of the carotids in cases of epilepsy, compressed both arteries in a case of hydrophobia, just as a paroxysm of convulsions was coming on, which immediately ceased, and the patient fell into a kind of syncope. Not being allowed to persevere with his plan, the patient died.‡

*Tetanus.* A case of idiopathic tetanus, occurring suddenly on the decline of an attack of simple inflammatory fever, is recorded by Dr. A. Robert, of Chaumont.§ The patient recovered after copious bleedings, purgatives, blisters, antispasmodics, and opiates. [It seems questionable whether idiopathic tetanus is a correct designation for such a case.] Dr. Purefoy|| relates a case of trismus supervening on the extraction of a molar tooth, and cured by bleeding, tobacco enemata, and calomel and opium; and Dr. Hutchinson, of Nottingham, two cases of tetanus cured by belladonna, a trial of which he recommends in hydrophobia.\*\*

*Tic douloureux.* Dr. Hunt's†† treatise contains much practical information on the varieties and treatment of tic douloureux and other neuralgic disorders, the result of considerable observation of those affections in the warm and humid climate of the south of Devon. He arranges the various forms of tic douloureux according to the causes from which it springs: 1, arising from the neuralgic habit; 2, from dyspepsia; 3, from dyspepsia complicated with congestion of the liver and other viscera; 4, from anæmia; 5, morbid action in the spine; 6, disorder of the uterus; 7, disease of the brain; 8, local mechanical causes; 9, malaria, recession of eruptions, and other causes. His treatment is directed, in the first instance, to the removal of that morbid condition which appears to stand in the relation of an exciting cause, and of course varies in each case. He proposes no new mode of treatment, but points out the indications, and gives excellent rules for the administration of well-known remedies, more especially of arsenic, in which he places great confidence as a tonic. He finds it of most efficacy in those of a lax fibre, languid circulation, cold and moist skin, and whose urine is pale and plentiful.

M. Banneix‡‡ lays stress on the existence of one or more spots, painful on pressure, along the course of the affected nerve, as important to the diagnosis

\* Med. Gazette, Jan. 19, 1844; from Journal de Pharm.

† Gazette des Hôpitaux, Nov. 1, 1842.

‡ Gazette des Hôpitaux, Nov. 1, 1842. [This plan of compressing the carotids to arrest convulsive actions was recommended and adopted by Dr. Parry in hysteria.]

§ Archives Gén. de Médecine, Sept. 1843, p. 32.

|| Dublin Medical Press, Sept. 6, 1843.

\*\* Lancet, May 25, 1844.

†† The Nature and Treatment of Tic Douloureux, &c., by H. Hunt, M.D.; London, 1844.

‡‡ Bulletin Gén. de Thérap. t. xxv, p. 17.

of neuralgia, and after reviewing the principal modes of treatment, concludes by recommending repeated blisters over the different painful spots, as ascertained by pressure, and as an adjuvant, the application of the salts of morphia to the denuded surface. He thinks the connexion between neuralgia and morbid states of the digestive organs has been overrated. Dr. Hutchinson recommends the internal and external use of belladonna;\* and Dr. Dangerfield has related two cases confirmatory of Dr. H.'s views.†

Dr. Roelants of Rotterdam,‡ for six years past has obtained the most successful results from nux vomica in the treatment of prosopalgia; 29 cases are detailed, both recent and confirmed, of whom 25 were cured, 3 were under treatment, and 1 was but partially treated. The curative action is speedily manifested, and the duration of the affection appears to have no influence in this respect, very chronic cases being much relieved in eight days. In one case of seven years' standing, in a man æt. 61, two thirds of a grain of powdered nux vomica were given every two hours, followed by great relief in eight days, and a complete cure after two months' treatment. For five months longer (i. e. after the disappearance of all pain,) he continued to take three grains per diem to prevent a relapse, which after three years had not occurred. The importance of continuing the treatment for some time is particularly insisted on. This man had taken iron largely without effect. M. Rougier of Lyons§ employs morphia in the treatment of neuralgia, by the endermic method, and then exhibits strychnine internally to remove the partial paralysis that sometimes ensues, and to confirm the cure. If the strychnine reproduce or increase the pain, it is a sign that the neuralgia is not effectively cured, and vice versa.

*Sciatica.* Dr. Fioravante|| was led to employ blisters to the heels in the treatment of sciatica, from hearing of several empirical cures performed by a woman who applied irritating substances (*ranunculus sceleratus*,) to the same parts. The epidermis was softened, and then removed, till the blisters would produce their ordinary effects. The suppuration thus established was kept up for some time in chronic cases. Twelve cases are mentioned which were speedily cured by this means. [A memoir was published about ten years ago by Dr. Petrini of Aquila, a town of the Abruzzi, to make known a method of treating sciatica by the application of the actual cautery between the little toe and the next one of the affected limb. Quadri of Naples has obtained great success, by adopting the same treatment, and states that a Capuchin monk, affected with sciatica, used to carry about with him a cauterising iron.]

## 6. DISEASES OF THE URINARY ORGANS AND SKIN.

Dr. Barlow\*\* has collected a valuable series of cases illustrative of the diagnosis of disease of the kidney, in which he points out the value of irritability of the stomach as a distinguishing symptom between diseases of the kidneys, accompanied with irritation, and affections of other structures in the neighbourhood. The paper also contains much information elucidatory of the peculiar cerebral affections depending on the non-depuration of the blood by the kidney.

*Albuminuria, Causes of.* M. Fourcault's†† valuable investigations into the effects of suppression of the cutaneous secretion, have shown that albuminuria can be thus readily induced. He supposes that this effect is produced by the excess of lactic acid which is then found in the blood, and which reacts on the albumen. The introduction of lactate of soda into the veins also produces albuminuria, by favouring the excess of lactic acid in the blood. When the acid secretion of the skin is suddenly checked, it produces a marked change in the organic elements of the blood; and when gradually suppressed, a number

\* *Lancet*, vol. 1, 1843-4.

† *Ibid.* Oct. 7, 1843.

‡ *Arch. Gén. de Méd.* Sept. 1843; from *Alg. Konst. Letterbode*. No. 10, 1843.

§ *Gaz. Méd. de Paris*, July 8, 1843; from *Journal de Méd. de Lyons*.

|| *Annali Universali di Medicina*, Nov. 1843.

\*\* *Guy's Hospital Reports*, vol. vii.

†† *Comptes Rendus*, May 5, 1844.

of chronic diseases are produced, among which are albuminaria, scrofula, lepra, &c. &c. He admits, however, that albuminuria may also, though rarely, originate in a primary affection of the kidneys. Dr. Meyer of Tübingen,\* concludes from his researches, that albuminuria may be produced by an accumulation of blood in the kidneys, (without any organic alteration of their structure) either from augmented arterial supply, or stagnation in the veins. In this way he accounts for albuminous urine in diseases of the heart and lungs; and his conclusions are deduced from five experiments on animals, in some interrupting the flow of venous blood, and in others tying the aorta below the origin of the renal arteries; in all of which cases the urine became albuminous.

— *Pathology and Treatment of.* Dr. G. O. Rees,† assuming that most observers are now agreed that the blood-corpuscle consists of a membranous sac inclosing colouring matter, has directed attention to the extreme tenuity of the blood in certain stages of the morbus Brightii; and shown how this condition constitutes the true cause of the deficient proportion of hematosine observed in the later periods, inasmuch as it must interrupt those endosmotic changes occurring between the contents of the corpuscle and the chyle, when each fluid possesses its ordinary specific gravity. The increased quantity of water circulating in the early stages, he considers to be caused by the discharge of albumen by the kidneys. The iron which colours the contents of the corpuscles he believes to be communicated by the *aqueous extractive* of the chyle which passes into the corpuscle by endosmosis; and this process being interrupted by the abnormal tenuity of the blood, the red corpuscles are diminished. In a subsequent paper,‡ after pointing out the analogy in the pathology of various forms of anemia, to morbus Brightii, he recommends in the early stages the same plan of treatment that is found beneficial in chlorosis and anemia from loss of blood, viz. chalybeate tonics, saline purgatives, and nutritious diet, which though not immediately calculated to remove the condition of kidney known to exist, he has found efficacious in preserving the normal state of the blood, and thus assisting in recovery. He condemns any attempt to relieve the nephritic congestion by depletion, but recommends counter-irritation and dry cupping. Numerous instances have been recorded of granular degeneration of the kidney, even in an advanced stage, unattended with albuminous urine; and of persistent albuminous urine independent of any structural disease of the kidney.§

An instructive series of cases illustrative of albuminuria, arranged so as to exhibit the influence of particular remedies or plans of treatment, has been published by Drs. Bright and Barlow.|| Dr. Alken\*\* has found hydriodate of potash and iodine ointment useful; and Dr. Gutbrod†† having observed in the Vienna hospital great benefit from iodine, tried the ioduret of iron in two well-marked cases in the advanced stage, and with the best results. M. Monneret obtained great improvement in one case from tinct. cantharidis, in doses increased up to 60 drops; and in another case, from the use of vapour baths.‡‡

*Diseases of the Skin.* In his Treatise on Diseases of the Skin, Mr. E. Wilson§§ has adopted a natural system of classification, based on the anatomy and physiology of the skin, and given full information on all that is new and important connected with recent investigations in this department of medical

\* Archiv für Physiolog. Heilk. Jan. 1844.

† Guy's Hospital Reports, April 1845.

‡ Medical Gazette, Aug. 16, 1844.

§ See the following among others: Edinburgh Med. and Surg. Journal, April 1844; Wells's Report of Malta Hospital; Dublin Journal of Med. Science, Jan. 1843, and clinical lectures by Dr. Graves; Oesterreich. Med. Wochen. Nov. 26 and Dec. 3, 1842.

|| Guy's Hospital Reports, 2d series, No. 1.

\*\* Oesterreich. Med. Wochens. Jan. 28, 1843.

† Gaz. des Hôpitaux, Sept. 7, 1843; from Correspond. Blatt des Wurtemberg. &c.

‡‡ Gazette des Hôpitaux, Oct. 13, 1842.

§§ A Practical and Theoretical Treatise, &c. by Erasinus Wilson, 1844, 8vo.

science. Scarlatina, rubeola, variola, varicella, and vaccinia, are classed together, under the head of inflammations of the dermis and mucous membrane, characterized by constitutional symptoms of a specific kind. [That there is a general resemblance between these diseases, in many important particulars, is admitted; but few, perhaps, will be disposed to agree with Mr. Wilson, that the contagious virus from which they originate and spread, is in all of them identical. Whatever view may be taken of the relation between variola and its kindred diseases, varicella and vaccinia, far more satisfactory proofs than any Mr. W. has given, are required to establish the identity of the virus generating smallpox, measles, and scarlet fever.]

Dr. Vieil,\* superintendent of the Cronstadt hospital for diseases of the skin, has arranged these diseases into two classes: eruptions of the blood (*blutflechten*), and eruptions of the skin (*hautflechten*). The first are but symptomatic of internal derangements of the system, of some dyscrasia of the blood; the second are idiopathic diseases of some of the elementary tissues of the skin. These two classes, he maintains, are alike distinguishable by their causes, phenomena, consequences, and treatment. Excess of albumen gives rise to eczema; excess of fibrine to impetigo, and of the aqueous part of the blood to chronic urticaria, lichen, &c. The '*Nouvelle Dermatologie*' of M. Beume contains the exposition of a system founded on the etiology of cutaneous diseases.†

*Elephantiasis Græcorum* is endemic in Norway, and Dr. Danielsen states‡ it to be so prevalent that, of a population of 200,000, 1200 are lepers. He represents it as not contagious, but hereditary; especially the tubercular form, which has been seen in the newly-born infant. It is inevitably fatal. It occurs in two forms: *el. tuberculosa*, and *el. anæsthetica*. When not transmitted, the conditions favouring its evolution are damp and dirty clothes, small, ill-ventilated houses, thick fogs, indifferent food, and the other accompaniments of poverty. Mr. Trompes§ has ascertained that, throughout the Sardinian dominions there are about 100 lepers, and that the disease is undoubtedly contagious after it has reached the stage of suppuration. M. Benet, formerly physician to the King of Lahore, attributes the disease chiefly to the eating of pork and salt fish. Like other writers, he considers the preparations of arsenic the best remedies, and especially recommends an Indian formula, viz. 105 grains of white arsenic triturated for four days with 6 times as much black pepper, of which pills of the size of the seeds of "tares," are given night and morning.|| Mr. Skene, of the 52d foot, has described the disease as seen in New Brunswick,\*\* where the first case occurred in 1817. He ascribes it to a special virus of unknown origin, but spreading by hereditary transmission and contagion.†† Dr. Boyle, however, of St. John's, denies that there is any evidence of the disease having been transmitted by contagion.

M. Gruby has described certain cryptogamic plants, to the formation of which he attributes the origin and spread of *porriço decalvans* and *porriço acutulata*. In *porriço decalvans*, the parasite appears in the form of chaplets of sporules (rarely branched,) which surround the hair as with a sheath, for several lines beyond its exit from the skin. The hair first becomes gray, then brittle, and so falls off in pieces. In *porriço acutulata* the sporules fill the roots and shafts of the hair, become surrounded with articulated filaments that extend up the interior of the hair, which thus becomes filled, is rendered brittle, and breaks off. The sporules in this instance are evolved in the piliferous follicles, whilst in *porriço decalvans* they are generated on the hair after it has left the surface of the skin.‡‡ Dr. Wigan recommends the application of Beaufoy's concentrated acetic acid

\* *Medicinisches Correspondenz Blatt*, (in *Gaz. Méd. de Paris*, 15 April 1843.)

† *Nouvelle Dermatologie*, &c. par P. Beume, Paris, 1842, 2 vols. 8vo.

‡ *Comptes Rendus*, April 1, 1844.

§ *Annales de Thérapeutique*, Nov. 1843.

|| Rapport fait par M. F. Le Gros, sur un travail de M. Benet; *Gaz. des Hôpitaux*, Dec. 24, 1842.

\*\* *Lond. Med. Gazette*, June 14, 1844.

†† *Ibid.* late date.

‡‡ *Séances de l'Acad. des Sciences*, Aug. 14, 1843, and *Comptes Rendus*, April 1, 1844.



for three or four minutes to the scalp, previously shorn, as an unfailing remedy, and also as a sure method for detecting the disease in parts apparently sound;\* and Dr. Furnival verifies Dr. Wigan's statements.†

M. Emery‡ has given some practical observations on *sycosis menti* and its treatment, which he thinks should be strictly antiphlogistic. He confines himself to the application of emollient cataplasms and alkaline lotions, and condemns the use of stimulating ointments. M. Duchene Duparc advises that the pustules of sycosis and of acne should be painted night and morning with a concentrated solution of sulphuret of potash; and M. Dauvergne, after commencing with poultices, vapour douches, and antiphlogistic diet, &c., recommends the local application of a solution of sulphate of iron.§ In the course of some practical remarks on the use of arsenic in cutaneous diseases, Mr. Erichsen|| states that it should be given only to persons of a debilitated, relaxed habit, free from any symptoms of gastric irritation, when the disease is in an indolent, passive state, and especially when local stimuli produce no permanent irritation.

### 7. DISEASES OF UNCERTAIN SEAT, &c.

*Gout and Rheumatism.* Dr. Bence Jones's treatise,\*\* in which he endeavours to apply the physiological and chemical doctrines of Liebig to the elucidation of the pathology and therapeutics of gravel, calculus, and gout, has already been noticed in this Journal. Dr. Todd,†† though admitting the humoral origin of gout and rheumatism, denies that lithic acid is the *materies morbi* in gout, which must, he thinks, be looked for as a compound derived from the unhealthy action of the stomach and duodenum, and which being taken into the blood, unites with elements of bile that have accumulated there, through defective secretory action of the liver. The copious deposits of lithic acid often observed in the urine for weeks or months without the occurrence of gout, he thinks sufficiently prove that lithic acid cannot be the *materies morbi*, and is like manner he infers, from the non-existence of lithic acid in excess, in the urine in certain cases of gout, "that the morbid element of the disease may be present independently of lithic acid;" and he particularly insists that low, depressed states of the system are favorable to the development of the gouty paroxysm. Rheumatism he believes to consist in the presence of the same morbid element (lactic acid) in the blood, and calls attention to the important fact that the rheumatic diathesis may exist without presenting the usual phenomena of rheumatism, and that in this condition the heart may become seriously affected. The cardiac inflammation may in fact be primary, and when co-existing with the articular affection, is not usually to be viewed as the result of metastasis. He devotes a chapter to the connexion between rheumatism and uterine derangement, and adduces important reasons for believing that the accumulation of rheumatic matter in the blood may be the result of defective uterine action.

M. Briquet having employed with advantage sulphate of quinine in the treatment of typhoid fever, has had recourse to it in acute rheumatism. In his memoir, read to the French Academy,‡‡ he has detailed 23 cases treated in the following heroic manner: On the first day, 4, 5, or 6 grammes (3j to ʒiiss.) of the sulph. quinzæ (according to the age, &c. of the patient) were given, suspended in mucilage, in divided doses in the course of twelve hours. The same doses were repeated on the second and third days, when the symptoms had usually abated, and the doses were gradually diminished by gr. xv. per diem. The average duration of the pain and swelling of the joints was from three to five days. In more than one third there was cardiac complication,

\* Medical Gazette, Sept. 15, 1843.

† Idem, vol. i, 1843-4, p. 16.

‡ Bull. Gén. de Thérap. t. xxv, p. 170.

§ Idem, t. xxiv, 15 et 30 April, 1843.

|| Med. Gaz. May 5, 12, & 19, 1843. \*\* On Gravel, Calculus, &c. by H. Bence Jones, M.A.; Lond. 1842.

†† Croonian Lectures, by R. B. Todd, M.D. 8vo, 1843.

‡‡ Séance, Oct. 15, 1842; Gazette des Hôpitaux, Nov. 17.

recent or chronic. In all but four there was a marked abatement of the symptoms in twenty-four hours. The date of the affection did not influence the cure. Relapses occurred in two only. M. Devergie, in testing Briquet's statements,\* began with smaller doses, and gradually increased them, and made trial of the same remedy in chronic cases. He confirms Briquet's views, except that in acute cases he would give smaller doses than in the chronic. Other examples of the efficacy of Briquet's plan may be found scattered through the French journals, and Signor Mascheroni treated 40 cases in the Lodi hospital† with the best results, two or three only presenting any cardiac affection. The general result, however, of the investigations to which Briquet's memoir has led, is decidedly opposed to both the safety and utility of his plan. Several fatal cases have occurred in the French hospitals,‡ from these heroic doses. The conflicting opinions in reference to the toxic effects of large doses of quinine induced M. Melier to investigate the whole subject afresh, and Messrs. Andral, Beguin, &c. have reported on the memoir presented by Melier to the French Academy.§ His experiments sufficiently prove the poisonous effects on dogs, of large doses, viz. gr. 15 and upwards. The blood was always found fluid, and the brain, lungs, and gastroenteric mucous membrane congested. The symptoms in men and dogs are similar, viz. intoxication, disturbance of the senses, diarrhoea, hæmaturia, amaurosis, deafness, (very frequent,) aphonia, delirium, coma, epileptiform, convulsions, and death. [These statements correspond with those of Giacomiri, as the result of his experiments; 'Annali Univers. di Medicina,' March, 1841.] Melier shows that the utility of moderate doses of quinine in certain forms of rheumatism had been long ago pointed out by other physicians, e. g. Morton, Leroy, &c., and the reporters refer to Haygarth's clinical researches, who obtained the best results from doses of gr. 10 and upwards of *bark* every four hours. Dr. Popham's observations on this subject|| induce him to believe that bark is most useful in the fibrous form of rheumatism, and after the more acute symptoms have been combated by antiphlogistic means. If cardiac symptoms are present, the bark should be deferred till these are overcome. Periodicity of the symptoms, whether produced by the treatment or peculiar to the attack, calls for bark, and especially when profuse colliquative acid sweats are present, and the pulse small and feeble. Dr. J. J. Furnival\*\* contends that acute rheumatism consists essentially in an acid state of the blood, and that the best treatment consists of the use of alkalies and antiphlogistics, since adopting which, he has never met with a single example of cardiac complication. The treatment of rheumatism by large doses of nitre has also attracted much attention. M. Martin Solon†† appears to have been led to this mode of treatment by the observations of Brocklesby, Macbride, and others, and by the consideration of the contra-stimulant, temperant qualities of the salt. Since 1840 he has thus treated 33 cases of severe acute rheumatism, demanding active means, of which 20 were cured from the second to the seventh day of treatment. Nitre, he states, is easily tolerated by rheumatic patients in doses of from 3v to 3xv, in the 24 hours, if given in large quantities of diluent drinks. It is in acute cases only that it is useful, and its sole apparent effects are diminution of the heat of the skin and of the frequency of the pulse. It prevents the occurrence of endocarditis, and shortens the period of convalescence; but in complicated cases does not supersede the necessity for bloodletting. M. Monneret,‡‡ however, in an instructive memoir on the comparative effects of treatment by colchicum, nitre, and bloodletting, states that the influence of nitre on the progress of eight severe cases appeared absolutely null. Neither the heat of

\* Gazette Médicale, Dec. 30, 1842.

† Gazzetta Medica di Milano, Feb. 1843.

‡ L'Examineur Médicale, t. III, No. 16; and Gaz. des Hôp. 11 April, 1843.

§ Bulletin de l'Acad. Roy. de Méd. 31 May and 15 June, 1843.

|| Dublin Medical Journal, Sept. 1844.

\*\* Lancet, June 1, 1844.

†† Bull. de l'Acad. Roy. &amp;c. t. ix, p. 130. See also, for further observations on the nitre treatment, Allgem. Med. Cent. Zeitung, 26 Mar. 1843, par Dr. C. F. Bartels.

‡‡ Arch. Gén. de Méd. March 1844, p. 268.

skin nor quickness of pulse was in the least affected. Professor Forget,\* on the contrary, contends that nitre in large doses is a remedy of real efficacy in certain cases, and that in doses of from 8 to 45 drachms, given with diluents, it is rarely productive of any ill consequences. M. Requin's experiments† are strongly corroborative of the efficacy of Dr. Corrigan's treatment by opium, but do not justify the abandonment of depletion.

*Diabetes mellitus.* Dr. Percy's essays‡ contain the results of some inquiries, very ably conducted, into the changes which starch and wheaten flour undergo in the healthy stomach—the situations in which grape-sugar is found in diabetes—what part of the system it is formed, and what are the particular conditions attending its formation. He believes the kidneys merely eliminate the sugar from the system, that the disease may exist independently of any structural change, and that sugar is certainly formed in the stomach in diabetes. Dr. Watts§ considers the proximate cause of the disease to reside in the stomach, which in the first stage is in a state of inflammation, during which lactic acid is secreted, and lactic acid and lithate of ammonia are present in the urine; in the latter stage the stomach is in a state of atony, and sugar and lactic acid abound in the blood and all the secretions. Four or five bodies of diabetic patients, examined by Dr. Watson,|| presented no evidence of the usual connexion with scrofula.

Several examples of reputed cures of diabetes are recorded. One by Mr. Hodges of Downpatrick,\*\* in which the exciting causes appear to have been loss of blood, and a diet consisting almost exclusively of potatoes and other vegetables. The treatment consisted of the use of ammonia and nitrogenised food, according to Dr. Barlow's plan. A second by Dr. Gennaro Festeggiano,†† in which the treatment consisted of drinks containing a small quantity of ipecacuanha, and acidulated with hydrochloric acid. The symptoms abated in eight days, and the patient was cured in a month. A third, by M. Combette,‡‡ in which the rapidity of the cure was equally remarkable. The patient, a man æt. 40, under Mr. Rostan's care, had been treated for a month, without benefit, by an exclusively animal diet and vinous lemonade. M. Combette put him again on animal diet, with a very little bread, and prescribed a pill, containing 25 centigrammes of iodide of iron four times a day. Four days after, the urine was very considerably diminished, and from that time he continued rapidly to improve. A fourth case is related by Dr. Cowan,§§ in which animal food, with the cruciferous vegetables and muriated tinct. of iron were the principal remedies. This case remarkably illustrated the injurious influence of bread as an article of diet, which also was remarked in an unsuccessful case detailed by Dr. Theoph. Thompson.||| A fifth case is reported by Dr. Grayson to have been cured by the tinctures of cinchona, valerian, and lytta, animal food, with lime water and a little wine for drink.\*\*\* MM. Mialhe have detailed a case of 18 months' standing cured by bicarbonate of soda and hydrated calcined magnesia, flannel clothing, and vapour-baths.

*Purpura febrilis, fatal in 28 hours.* M. Hummel†† has related a case with this title, occurring to an athletic man who had enjoyed good health till two days after a debauch, when he came into the Vienna hospital with symptoms of gastric fever. He then presented symptoms of cerebral congestion, complained of thirst and nausea, and had much abdominal tension. The tongue was loaded; the pulse full, hard, and frequent. Diarrhoea which had been present, had ceased. On the following day, the whole surface of the body, with the exception of the face, was covered by an erythematous eruption, intermixed over the abdomen with purple patches. The respiration was anxious and hurried; the epigastric region tense and painful; the pulse frequent and

\* Bull. Gén. de Thérap. t. xxv, p. 5.

† Bull. de l'Acad. Oct. 1843.

‡ Medical Gazette, 1843-3-4.

§ Lancet, vol. ii, 1842-3, p. 65.

|| Clinical Lecture, reported in Provincial Medical and Surgical Journal, Nov. 5, 1842.

\*\* Medical Gazette, July 7, 1843.

†† Il osservatore Medico, Feb. 1842.

‡‡ Gazette des Hôpitaux, Oct. 20, 1842.

§§ Provincial Medical and Surgical Journal, June 17, 1843.

||| Ibid. No. 140.

\*\*\* New York Journal of Medicine, May 1844, p. 309.

†† Oesterreich. Med. Woch. 1843, No. 16.

full; and the diarrhoea had returned. Infusion of ipecacuanha with Haller's acid elixir was ordered. In the evening there was much febrile exacerbation, with constant jactitation, and the erythema was replaced by a petechial eruption, the patches of which were largest and most numerous over the abdomen, whence they rapidly extended, and assumed a violet colour. The skin was hot, dry, and pungent to the touch. The following day the face was swollen "and ferocious," and the conjunctivæ of a ruby red, from suffused blood. The tongue, gums, and fauces were white as though they had been pencilled with nitrate of silver; the breath was burning, and there was intense thirst, anxious respiration, epigastric and abdominal tension, diarrhoea, pale turbid urine, with much mucous sediment, and the purpura had extended to the knees and neck. On the chest the sebaceous follicles were prominent, and their contents readily oozed out on pressure. The following day these symptoms were present in a still more aggravated form, and there was cough with sanguineous expectoration; extreme oppression, and general insensibility came on, and the patient died in 28 hours from the first appearance of the petechiae. The mucous and serous membranes were throughout covered with ecchymoses, and the cellular tissue infiltrated with bloody serum, which also was effused into the pleural and pericardial sacs. The lungs and liver were largely infiltrated with blood; the spleen was voluminous but firm, and of a brownish red colour. The intestinal follicles were tumefied. The thick, dark-coloured blood which existed in the vena portæ was, on analysis, found to be deficient in fibrine and salts. [Was this merely a malignant form of fever, and does the condition of the intestinal follicles support this view? Or, was it an example of the petechial smallpox described by Moreton, Sydenham, and Heberden?] A very similar case is described by Mr. Adams,\* as probably arising from the variolous contagion to which the patient had been exposed some weeks previously. There was no appearance of vesicles, pustules, or papulæ; the eruption was nowhere elevated above the surface. There were also bloody discharges from the bowels and bloody urine. Five days, from the commencement of the attack, elapsed before death took place. Three cases detailed by Dr. Wotherspoon,† bear also a close analogy to the above. They occurred in the New York hospital in three successive winters, and are described as "a rare form of exanthematous disease." They all occurred in strong healthy men in the prime of life, and in all, the symptoms and pathological appearances were very similar. The prodromi were those of a severe febrile attack, and the succeeding phenomena bore the closest resemblance to those above detailed in Dr. Hummel's case, with the exception that there were ecchymoses observed about the pharynx during life, and numerous minute vesicles on the surface filled with bloody serum, and hemorrhagic discharges from all the outlets of the body. Slight delirium preceded death, which occurred on the fourth or fifth day. The blood had the appearance of a dark cherry red watery fluid, and contained merely a few thin friable black coagula. From the character of the premonitory symptoms, and of the eruption, as well as from the variolous fetor exhaled, and the strong resemblance which the cases bore to the peculiar forms of variola described by the older writers, the author is disposed to refer these cases to variola.

Mr. Stainthorpe reports a case of purpura hæmorrhagica occurring in a stout healthy-looking child, æt. 4, and attended with febrile symptoms, in which acetate of lead and opium with wine appear to have been very useful.‡ Mr. Whitwell§ has treated three cases successfully with creosote, [but it may be questioned whether in these instances, occurring in persons almost starving, the cure was not rather attributable to the improved diet.]

Dr. W. Samson Himmelstiern,|| has described an epidemic of *scorbutus* which prevailed in Russia, in the spring and summer of 1840. Mr. Dalton refers to Dr. Baly's communication (Medical Gazette, February 10) on the antiscorbutic

\* Medical Gazette, Jan. 17, 1845.

† New York Journ. of Med. Science, March 1844, p. 203.

‡ Med. Gaz. Oct. 14, 1843.

§ Lancet, Feb. 11, 1843.

|| Hæser's Archiv, v. 4, in Schmidt's Jahrbuch, 1844, No. 8, p. 193.

virtues of the potato, which he confirms by his own observation on board ship, on various occasions.\*

*Climacteric disease.* Dr. H. Kennedy† justly observes that nothing has been added to this subject since the original paper of Sir H. Halford, throughout which Dr. Kennedy thinks an erroneous idea prevails, viz. that the affection occurs only in the aged. "At least," he says, "I may state with certainty that an affection which agrees in every respect with climacteric disease is by no means unfrequently met with in individuals between 20 and 30 years of age." His chief object is to direct attention to this point. He alludes to the fact that the various pains which very commonly usher in the attack are in a marked degree periodic. Weakness of the knees is a common symptom, not always connected with or dependent on exercise, but coming on at a particular time, even when the patient is at rest. The disease often sets in with acute symptoms, which are apt to lead astray, particularly when referrible to the head. Loss of sleep is the most constant symptom, and loss of flesh and a marked change in the countenance are also very constant phenomena; but he disagrees with Sir Henry Halford regarding the acceleration of the pulse; having seen cases in which, from first to last, the pulse was not in the least quickened. Partial paralysis (imperfect i. e.) is common. He disagrees with Sir Henry Halford in reference to the renal secretion, which Dr. Kennedy has found diminished, and often depositing the lithates throughout the illness. Men suffer more during the progress of the disease from derangement of the digestive system and brain, and women from symptoms referrible to the lungs or heart. The *average* duration of the complaint is about nine months. In regard to diagnosis, there is danger of confounding many cases at first with local organic disease. Most cases do well, though many are fatal in advanced life. The nervous system is mainly implicated. In opposition to Sir Henry Halford, he thinks the effects of the disease are often entirely shaken off. As it cannot be cut short, too much should not be attempted. Medicines are apt to act *peculiarly*; quinine is one of the most useful. Change of air is not desirable early in the disease. If any indiscretion in diet be committed, it is often followed by an aggravation of symptoms, after 48 rather than 24 hours. Medical treatment is of more avail in the latter half of the illness. [This paper certainly adds many important particulars to Sir Henry Halford's account. The disposition to periodic action, and the calmness of the pulse in some cases, the reporter can confirm from his own observation.] The history of his own case, given by Sir Alexander Crichton, under the denomination of "interrupted circulation," and in which the Bath waters on two occasions were found useful, may perhaps be referred to this head.‡

*Mollities ossium.* Mr. Solly§ has recorded two cases of this somewhat rare disease, both occurring to females, one aged 29 and the other 39. The former died in a state of mental derangement, the membranes and substance of the brain having become implicated in the active disease, which had, for some time, been going on in the bones of the cranium. The immediate cause of death in the latter case was suffocation from contracted thorax. From a comparison of the symptoms during life with the appearances after death, Mr. Solly believes that the disease is of an inflammatory character. The earthy matter of the bones is, he thinks, absorbed and thrown out of the system by the kidneys. The excretion of earthy matter was in one instance so abundant as to have clogged up the calices and pelves of the kidneys, and formed a solid calculus. This excretion of phosphate of lime the author considers not to have been previously established, the chemical constitution of the earthy deposits observed in the urine not having been ascertained. The place of the earthy matter in the bones is supplied by the red grumous matter which abounds in them, and which he believes to be a morbid product, the result of active disease.

\* *Lancet*, vol. 1, 1842-3, p. 895.

† *Dublin Journal of Medical Science*, May 1844; *Observations on Climacteric Disease, with Cases*, by H. Kennedy, M.D. &c.

‡ *London Med. Gazette*, Dec. 1, 1843.

§ Two Cases of *Mollities Ossium*, read before the Med.-Chir. Society, June 18, 1844.

## INFLAMMATION AS IT OCCURS IN THE DIFFERENT TISSUES OF THE EYE;

BEING A COMPLEMENT TO THE

*Author's Reports on Inflammation and the Healing Process.*

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IN Reports contained in the Numbers of this Review for April and July 1844, the nature of inflammation and of its events was analysed. Except for the purpose of occasional illustration, these processes, as they occur in particular structures, were not referred to; what was then said being applicable to inflammation and its events whatever might be the structure affected. But as the phenomena of inflammation are more or less modified according to the structure affected, it is now purposed, in order to complete the history of the subject, to consider inflammation and its events as they present themselves in particular structures.

The particular structures to which reference was made for the purpose of illustrating the general doctrines of inflammation, were certain of those of the eye—an organ generally pointed to by pathologists as that in which inflammation may be most conveniently and perfectly studied. Composed of different tissues, and these for the most part open to direct inspection, the eye, when affected with inflammation, indeed affords an especially favorable opportunity for observing and often for comparing the modifications of the phenomena of inflammation dependent on difference of structure.

On the present occasion, it is purposed still to keep to the eye.

## I. OBJECTIVE PHENOMENA OF INFLAMMATION OF THE DIFFERENT STRUCTURES OF THE EYE.

§ 1. In entering on this subject, it is proper to call to mind the following particulars:

1st. *Inflammatory Congestion* is manifested to the naked eye by *preternatural redness*, which, as is well known, is owing to the large quantity of red blood-corpuscles accumulated and stagnant in the small vessels, as before explained.

2d. *Exudation*, when the exuded matter is not directly observed, as it may be in *iritis* for example, is manifested at first in different ways, according to the structure of the part—e. g. by swelling, thickening, opacity, vesicles, phlyctenulæ, discharge, &c., and subsequently by the new tissues or by the pus, which may be developed from the exuded matter.

3d. *Extravasation of Blood* is manifested either by actual hemorrhage, or by infiltration of the tissue in the form of *ecchymosis*, &c. The redness of *ecchymosis* is in general readily distinguished from that of vascular congestion.

## INFLAMMATION OF THE CONJUNCTIVA.

§ 2. There are four principal forms of inflammation, of which the conjunctiva, like other mucous membranes, may be the seat—catarrhal, erysipelatous, pustular or aphthous, and pseudo-membraneous.

*Catarrhal inflammation of the conjunctiva.*

§ 3. *Congestion—Redness.* The conjunctiva of the eyelids and of the palpebral sinuses, is deep red. The conjunctiva is also deep red where it is reflected upon the eyeball; but towards the cornea the redness is, at the commencement of the inflammation, gradually shaded off. When, however, the inflammation is fully developed, the redness extends even to the margin of the cornea.

§ 4. The injection of the highly-developed capillary network of the palpebral conjunctiva gives rise to a uniform and intense redness, concealing from view the

larger subjacent vessels. Except in a very high degree of inflammation, the injection of the less developed capillary network of the sclerotic conjunctiva does not conceal the larger subjacent vessels. Indeed, what most strikes the observer is the network with large meshes formed by the intercrossing and inosculatation of comparatively large and tortuous vessels—the arteries and veins which carry the blood to and from the superficial capillary network.

§ 5. In consequence of the accumulation of blood in its vessels, the conjunctiva is thickened. The papillæ of the palpebral conjunctiva, being for the same reason swollen and erect, the inner surface of the eyelids has a velvety appearance.

§ 6. The conjunctiva covering the caruncula lacrymalis, and forming the semilunar fold, is deep red like the palpebral conjunctiva, and being at the same time thickened by the accumulation of blood in its vessels, both the lacrymal caruncle and semilunar fold appear much enlarged.

§ 7. *Exudation.* At the commencement of the inflammation a serous exudation takes place from the surface of the conjunctiva. By and by, a puro-mucous or purulent discharge, the presence of which is an important character of the inflammation, is established.

§ 8. There is necessarily some exudation into the substance of the conjunctiva itself, producing thickening of it, and enlargement of the papillæ of its palpebral portion.

§ 9. In some cases small phlyctenulæ like pins' heads are observed on the palpebral conjunctiva. These are produced by small collections of exuded matter, raising up the epithelium.

§ 10. The eyelids, besides being somewhat red, may be more or less swollen, from exudation into their cellular tissue. There may also be exudation into the cellular tissue underneath the sclerotic conjunctiva, constituting *chemosis*. Tumefaction of the eyelids and chemosis are analogous in their nature and mode of production to that swelling which takes place in the neighbourhood of any active inflammation.

§ 11. *Extravasation of blood.* Ecchymotic spots sometimes present themselves especially over the sclerotic, in consequence of extravasation of blood into the substance of the sclerotic conjunctiva, or into the cellular tissue underneath. When the inflammation is intense, there may be actual discharge of blood from the surface of the conjunctiva. This more readily takes place from the palpebral conjunctiva.

§ 12. From the description now given of catarrhal inflammation of the conjunctiva, it appears that the matter which is exuded from the inflamed surface is converted into puriform mucus or actual pus, though the surface is not ulcerated. On the other hand, the lymph which may have been exuded into the substance of the membrane is developed into tissue, which is the cause of that thickening of the conjunctiva, and enlargement of its papillæ, which remain after the inflammation has subsided, for a greater or less length of time, or even permanently.

§ 13. *Healing process.* Before a puriform or purulent discharge is established, and before thickening of the conjunctiva and hypertrophy of its papillæ have taken place, consequently, before exudation has been anything more than serous, resolution of the inflammation may occur. In the contrary case, the return to the healthy state proceeds thus: As vascular congestion, or in other words, the redness diminishes, the sero-mucous or puro-mucous discharge becomes less and less, and any accompanying chemosis and swelling of the eyelids subside. It is to be remarked that the vascular congestion of the palpebral conjunctiva disappears less quickly than that of the ocular conjunctiva. The papillæ of the palpebral conjunctiva, moreover, are extremely apt to be left in a state of hypertrophy, constituting the so-called *granulations* of the conjunctiva.

§ 14. This view of the nature of the granulations of the conjunctiva has been called in question by Engel, (*Oest. med. Wochenschrift*, 1842, No. 9.) He asserts, and Henle agrees with him, that the palpebral conjunctiva does not present a pa-

pillary body, and consequently that the so-called granulations cannot be hypertrophy of it. Engel and Henle view "granulations" as new formations resulting from the organization of a plastic product on and in the tissue of the conjunctiva.

§ 15. In regard to this, it is to be observed that the palpebral conjunctiva may present a granular or velvety appearance in the stage of inflammatory congestion, before there can be any question of new formations, owing simply to the enlargement, by injection with blood, of those minute prominences, named papillæ by some, mucous glands by others, with which the tarsal part of the palpebral conjunctiva is beset, and which give rise to its natural fine shagreen appearance: and that there is nothing in Engel's description of fully-developed granulations to show that they are not hypertrophy of these same minute prominences, i. e. enlargement of them by the addition of new organic elements, resulting from the organization of plastic matter, exuded on or in them, together with general thickening of the conjunctiva from the same cause.

#### *Erysipelatous inflammation of the conjunctiva.*

§ 16. Like inflammation of other mucous membranes, inflammation of the conjunctiva sometimes presents itself with characters between inflammation and œdema. There is considerable infiltration of serum into the substance of the membrane itself as well as into the subjacent cellular tissue. The disease is known by the name of *erysipelatous ophthalmia*.

§ 17. The most remarkable appearance in this ophthalmia is the watery exudation under the sclerotic conjunctiva, whereby the latter is raised up in folds which protrude like vesicles between the eyelids. The conjunctiva is of a light red colour, inclining to yellow, and presents here and there spots of ecchymosis, but individual vessels are not readily discernible. The mucous secretion of the conjunctiva is somewhat increased in quantity.

#### *Pustular or aphthous inflammation of the conjunctiva.*

§ 18. *Congestion—Redness.* The sclerotic conjunctiva presents one or several small scarlet spots, produced by the convergence of vessels. At the spots mentioned the vessels are large and evident, but as they recede from the spots, they cease to be distinguished by the naked eye; hence the vessels of the red spots appear as if isolated from all connexion with any other. By and by, however, the continuity of some of the vessels of the red spots, with those of the rest of the conjunctiva, comes to be distinctly seen.

§ 19. *Exudation.* The exuded matter first distinctly manifests itself whilst in process of metamorphosis into pus as a small yellow flake in the centre of the vascular spots.

§ 20. In consequence of the little density and cohesion of the epithelium of the conjunctiva scleroticæ, it does not, like the epidermis of the skin, retain the exuded matter, but gives way, so that a proper pustule is not formed, but an aphthous spot or small abrasion covered with the exuded matter, becomes pus or puriform, and fragments of epithelium.

§ 21. Pustules often present themselves close to the margin of the cornea. In this case the vessels do not converge from all points to the pustules, but come from the side of the sclerotic conjunctiva only, as indeed was to be expected, seeing that none could come from the cornea on account of its being non-vascular. The thick epithelium of the cornea is at the part opaque and slightly raised by the exuded matter which, with the softened epithelium of the sclerotic conjunctiva of the spot affected, forms, as in the preceding case, the small yellow flake. This form of pustule thus presents a character intermediate between the phlyctenula or pustule of the cornea and the aphthous spot of the sclerotic conjunctiva above described.

§ 22. *Extravasation of blood.* Besides the red spots from vascular congestion just described, there may be patches of ecchymosis.

§ 23. *Healing process.* Pustules or aphthæ of the conjunctiva may run into



ulceration, but in general the spots of vascular congestion disappear, and the abrasion produced by the separation of the epithelium, quickly heals, the spot becoming covered with a new epithelium, whilst the coating of puriform matter and fragments of old epithelium is thrown off.

*Inflammation of the conjunctiva, with pseudo-membraneous exudation.*

§ 24. In inflammation of mucous membranes it is well known that the matter exuded on the surface is sometimes found in the form of false membranes. This matter, however, does not, like that exuded by serous membranes, become organized into tissue; such false membranes are usually separated and thrown off.

§ 25. An approach, perhaps, to pseudo-membraneous exudation, occurring in inflammation of the conjunctiva, presents itself in the yellow membraniform flakes, commonly considered as flakes of puro-mucus, which are thrown off in the purulent ophthalmia. In some cases of phlebitic ophthalmia there are layers of exuded lymph on the conjunctiva.

§ 26. The coagulation and exfoliation of the epithelium, especially of the cornea, in consequence of chemical injuries, have been mistaken for pseudo-membraneous formation.

*Mortification and ulceration of the conjunctiva.*

§ 27. Mortification of the conjunctiva, as a consequence of inflammation, does not appear to have been met with, but sloughing of parts of the conjunctiva, in consequence of chemical injury, sometimes occurs. Ulceration, except from a specific cause, seldom takes place.

*Healing of wounds of the conjunctiva.*

§ 28. Wounds of the conjunctiva gape much but readily heal. The conjunctiva becomes injected at the edge of the wound, and lymph is exuded, which becomes organized in the manner already explained, according as the union is by the first or second intention, one or the other event being in general determined by the apposition or non-apposition of the edges of the wound, as in the skin.

§ 29. The palpebral and ocular surfaces of the conjunctiva have no tendency to form adhesions even while kept in close apposition, unless previously made raw. When abrasion of the surfaces has been produced, especially by burns and escharotics, there is then great tendency to the formation of adhesions.

INFLAMMATION OF THE SCLEROTICA.

§ 30. *Difference between conjunctival injection and sclerotic injection.* In conjunctival inflammation it has been seen that the vessels of the sclerotic conjunctiva are large, somewhat tortuous, and arranged in a reticular manner; that the colour is scarlet, or brick red, and that it may be deeper towards the orbit, but more or less shaded off towards the cornea. In sclerotic injection the redness is in the form of a pink or lake coloured zone, encircling the cornea; the injected vessels being very minute, and disposed in straight radiating lines, as if from the margin of the cornea, where the tint is deeper, whilst it is shaded off, and disappears towards the orbit—the converse of what occurs in the injection attending conjunctival inflammation.

§ 31. The seat of the injected vessels, whether in the sclerotic conjunctiva or in or on the sclerotic itself, is easily proved, supposing any doubt exist, by making the conjunctiva slide on the sclerotica, when the vessels, if seated in the conjunctiva, will be observed to move along with it, whereas, if seated in the sclerotica, or closely applied to its surface, they will remain stationary. When both conjunctiva and sclerotica are injected at the same time, the pink hair-like vessels of the sclerotica are seen stationary through the larger meshes of the sliding conjunctiva. But when the conjunctiva is very much injected, the state of the sclerotica cannot be seen.

§ 32. If the vascular congestion be alone taken as inflammation, then it must be said that the part of the sclerotica visible during life through the conjunctiva,

is often inflamed, but if exudation, and the changes which the exuded matter undergoes, be rather assumed to be indicative of inflammation, then it must be admitted that the sclerotica is comparatively rarely the seat of inflammation.

§ 33. Fibrous tissues in general do not appear to be more frequently the seat of the effects of inflammation than the sclerotica, but are they not as frequently the seat of vascular congestion? Is rheumatism anything more in most cases than vascular congestion in fibrous tissues, with perhaps serous exudation in neighbouring parts? What is called rheumatic ophthalmia appears to be at least nothing more than inflammatory congestion of the sclerotica, usually, with more or less implication of the iris.

§ 34. Rheumatism, or inflammatory congestion in fibrous structures, may at last lead to exudation of lymph either into the substance or on the surface of the part affected,—in the one case giving rise to the thickening and induration of the fibrous structures, in the other, to effusions into the joints or adhesions, such as are met with in pericarditis. By repeated congestions, the sclerotica is indeed left in a somewhat altered state, but it is the cornea or iris which is principally the seat of exudation of lymph and the changes consequent on it, as the joints are in articular rheumatism.

§ 35. The most marked example perhaps of the tissue of the sclerotica becoming the seat of changes from inflammation occurs in sclerotic-choroiditis. The first change is a thickened and fleshy appearance of the sclerotica, but its texture becoming at the same softened, it by and by yields to the distension from within the eye, protrudes and becomes attenuated, the dark colour of the choroid shining through, (*sclerotic staphyloma*.) In some cases, however, instead of becoming attenuated, the affected part of the sclerotica actually becomes thickened, of a dense white pearly appearance.

#### INFLAMMATION OF THE CORNEA.

§ 36. *Congestion—Redness.* On account of the non-vascularity of the cornea, there is at first no redness of it from vascular congestion. Congestion is not, however, wanting, but is seated in the adjoining conjunctiva and sclerotica, as already explained. (Report on Inflammation in this Review for April, 1844.)

§ 37. *Exudation.* That the cornea is the seat of exudation is manifested by opacities of various kinds, ptyctenulæ, and abscesses. When new vessels are developed in the exuded matter, the cornea then becomes the seat of more or less redness. This, however, is to be distinguished from that which may result from effused blood. When effusion of blood occurs, it appears usually in a patch near the edge of the cornea.

§ 38. One or other of the three principal layers of the cornea may be more particularly the seat of the exuded matter; hence there are distinguished inflammation of the proper substance of the cornea, inflammation of the conjunctiva corneæ, and inflammation of the membrane of Descemet.

#### *Inflammation of the proper substance of the cornea.*

§ 39. In inflammation of the proper substance of the cornea, the vascular congestion is seated in the sclerotica in the form of the circumcorneal sclerotic zone, but sometimes the redness is very slightly marked. There is generally also congestion of the circumcorneal network of the conjunctiva.

§ 40. The exuded matter is deposited either in the interstices of the tissue or on its surface, raising the epithelium up in the form of a ptyctenula, or even a blister.

§ 41. The exudation into the interstices of the proper substance of the cornea, may produce map-like patches of dimness and nothing more. Or the exudation being in greater quantity, a general grayish or yellowish white opacity results, denser at some points than others, and intermixed with red from the presence of new vessels. In this case, the cornea presents a peculiar opalescent appearance.

In certain cases there is less exudation and development of vessels; the cornea

still retains a degree of transparency, but is of a dirty yellowish green colour, and rough like ground glass, owing to minute vesicles on its surface, or minute points of ulceration, resulting from the bursting of the vesicles. There is softening of the cornea in all these cases.

§ 42. When exudation into the proper substance of the cornea, or under the epithelium, takes place rapidly and copiously, the exuded matter is generally formed into pus or puriform matter, and the result is an abscess or a pustule. In such cases the inflammation is more of an acute character than in the preceding. There is more vascular congestion in the conjunctiva and sclerotica, so much so that the cases in question are commonly viewed as examples of *corneitis* supervening on inflammation of the conjunctiva and sclerotica, while the preceding cases are, on account of the slight appearance of congestion in the conjunctiva and sclerotica, viewed as examples of primary *corneitis*. But from what has been above said of inflammation of the cornea, there is no *primary corneitis* in the sense here implied, i. e. with vascular congestion first in the cornea.

§ 43. The depositions of yellow matter which occur in the interstices of the cornea at its lower part, and which, on account of their presenting the form of the lunular spot at the root of the nails, are called *unguis* or *onyx*, and which are in general rapidly absorbed as the attendant inflammation is subdued, have less of the character of abscesses than the circumscribed collections of matter which form in the centre of the cornea. These latter make their appearance as a densely opaque spot, first white then yellow, around which the rest of the cornea is more or less opaque from exuded lymph, in which there may be new vessels, as in the walls of abscesses elsewhere.

§ 44. Most frequently the exuded matter is deposited on the surface of the proper substance of the cornea, raising up the epithelium in the form of a phlyctenula or blister. The epithelium of the cornea being denser, thicker, and more coherent than that of the sclerotic conjunctiva, confines the matter which is exuded, in much the same way that the epidermis of the skin does. The matter being at first a transparent fluid, there is a phlyctenula; subsequently becoming puriform or purulent, there is a pustule. Often the process does not proceed so far as the formation of a pustule.

§ 45. A phlyctenula or pustule of the cornea having burst, a small ulcer covered with puro-lymph is left, which may be compared to the aphthous spot on the sclerotic conjunctiva. A fasciculus of new vessels, extending to this ulcer from the circumcorneal conjunctival network, may make its appearance.

§ 46. *Healing process.* When the congestion around the cornea subsides, the matter exuded into its substance may gradually be absorbed. And this even when development of it has gone on to the formation of new vessels, though tardily, for the more the exuded matter has been developed, the less readily does it dissolve and become fitted for absorption. The new vessels first disappear, leaving a grayish white opacity, which clears away from the circumference towards the centre of the cornea, where often more or less opacity remains.

§ 47. A pustule on the surface of the cornea, or an abscess in its proper substance, may disappear by absorption of its contents, leaving, however, more or less opacity: but these collections of matter usually burst, and leave a sore, which may either commence to heal by granulation or run into ulceration.

#### *Inflammation of the conjunctiva corneæ.*

§ 48. This usually accompanies acute inflammation of the proper substance of the cornea, or is an extension of inflammation of the sclerotic conjunctiva.

§ 49. In consequence of the exudation, the conjunctiva corneæ becomes at some point opaque and thickened, and here new vessels are soon formed, which, connecting themselves with the circumcorneal conjunctival network—which at the place is in a state of congestion—appear as a mere extension of a fasciculus of vessels from it. The opacity and vascularity may gradually spread across the cornea.

§ 50. In some cases of what may be called inflammation of the conjunctiva corneæ, there are fewer new vessels and less opacity, but there is superficial spreading ulceration. In certain cases the cornea presents here and there on its surface vascular fungous granulations.

§ 51. The changes which the conjunctiva corneæ undergoes in inflammation, the thickening and vascularity, are very apt to remain in the form of pannus, vascular corneæ, &c.; but often they disappear entirely, and the cornea resumes its natural appearance.

*Inflammation of the membrane of Descemet.*

§ 52. In this inflammation, the vascular congestion is in the sclerotic zone. The exuded matter is deposited between the proper substance of the cornea and the membrane, and generally presents itself in the form of scattered punctiform opacities. Here also new vessels, when formed, make their appearance.

§ 53. As the inflammatory congestion subsides, the exuded matter is removed by absorption.

*Ulceration of the cornea.*

§ 54. The cornea is extremely prone to ulceration. The ulceration may be limited to a mere abrasion or exfoliation of the epithelium, or it may affect the proper substance of the cornea also. The membrane of Descemet does not appear to be liable to ulceration; but when exposed and deprived of support by penetrating ulceration of the proper substance of the cornea, it bursts.

§ 55. *Abrasion of the epithelium* presents itself either in that form, in which its surface looks like ground glass, or in a form like what is presented after death, when the epithelium begins to soften, and portions of it are detached by wiping the surface. The first form occurs in inflammation of the proper substance of the cornea. The second is rather a result of inflammation of the conjunctiva corneæ; there is superficial vascularity, and the abrasion, like ulceration, has a great tendency to spread; but while it spreads on one side, cicatrization may be seen taking place on another. The cicatrization gives rise to slight opacity.

§ 56. *Ulceration of the proper substance of the cornea.* This generally commences by the bursting of an abscess or phlyctenula. Both the bottom and edges of the ulcer may be clear, and the cornea around scarcely, if at all, nebulous. In other cases the bottom of the ulcer is filled with a grayish sloughy-looking matter, which is thrown off to be succeeded by the same thing, whilst the ulcer goes on increasing in depth, and may at last completely perforate the cornea.

*Mortification of the cornea.*

§ 57. The complete death of the cornea, and the separation of it in the form of a well-marked leathery slough, is of rare occurrence. The destruction of the cornea, which is so common in the purulent ophthalmia, takes place in a different manner.

§ 58. The cornea, overlapped all round its margin by the chemosed conjunctiva, may be observed to continue for some time unaffected; but within a short interval it will be found to have become quite opaque and softened. To this succeeds the process of destruction, which consists in that form of mortification, with small sloughs, which constitutes ulceration. The destruction may involve the whole cornea in its whole thickness, or a part only in its whole thickness; or it may involve a superficial portion only, and this of a greater or less size.

§ 59. The immediate cause of all this mischief appears to be the infiltration of the substance of the cornea with exuded matter, and the mechanical pressure exerted by the chemosed conjunctiva, whereby the nutritive movements are more or less completely arrested.\*

\* Though the cornea may become vascular in the course of inflammation from the development of new vessels, this does not apply to all non-vascular parts, to cartilage for example. The vessels which have been described as making their appearance in cartilage in the course of inflammation of joints do not properly speaking exist in cartilage, but in a new tissue which has supplanted the cartilage; this having been changed and destroyed in consequence of the inflammatory congestion in the parts from which it derives the materials for its nourishment. This view, which the author of this paper considers the correct one, is that given by Rokitanaky and agreed to by Henle.

*Healing of wounds and ulcers of the cornea.*

§ 60. *Healing by the first intention.* A simple incision of the cornea readily heals. From the vessels of the conjunctiva and sclerotica which are congested on that side of the cornea next the wound, lymph is exuded into the cornea at the seat of the wound, producing opacity to a greater or less extent around, and of more or less intensity. The cut edges are agglutinated by the exuded lymph, and by its organization continuity of structure is restored. What of exuded matter remains in the substance of the cornea around, producing opacity, is gradually absorbed, and the cornea clears in proportion as the injection of the conjunctival and sclerotic vessels subsides; a small speck perhaps, the cicatrice, merely remaining. No new vessels may have been formed in the cornea.

§ 61. *Healing by the second intention.* Loss of substance of the cornea, whether produced by ulceration or otherwise, is restored by granulation. The granulations may be non-vascular, or they may be vascular, from new vessels which have been developed in the exuded matter, and which have formed a connexion with those of the neighbouring conjunctiva and sclerotica. These new vessels generally disappear when the process of granulation is completed, and preparatory to cicatrization. Thus, when an ulcer has filled up by vascular granulations, one vessel after another disappears, until all are gone, leaving an opaque streak where their course in the cornea had been.

§ 62. At first the sore may be swollen, and more or less nebulous at the edges, and discharge a tough, yellow, puro-lymphy matter, which sometimes adheres to it, and hangs down from it in flakes. But when the ulcer begins to heal, its edges become decidedly gray and opaque, and in proportion as it becomes filled with granulations, the quantity of puro-lymphy matter discharged from it becomes less, until none at all is formed. At last cicatrization takes place, and the surrounding nebulosity diminishes, until it disappears altogether.

§ 63. The cicatrice is either a permanently opaque spot (*leucoma*) or it is a clear facet, presenting the appearance as if a small piece had been sliced from off the convex surface of the cornea.

## INFLAMMATION OF THE IRIS.

§ 64. *Congestion—Change of colour of the iris.* In consequence of the coloration of the iris, it does not, like the conjunctiva for example, when inflamed, appear red, but of a colour which is a compound of its own natural colour and that of the stagnant blood. Thus a blue iris becomes green, a brown iris reddish brown. The brilliancy of the iris is at the same time impaired or lost. Subsequent changes in the colour of the iris are owing to exuded matter and to changes in the pigment.

§ 65. The injected vessels are individually not very evident. Such may sometimes be seen, however, and are to be distinguished from those of new formation which make their appearance at a later stage of the inflammation.

§ 66. *External redness of the eyeball.* The circumcorneal sclerotic red zone is well marked. The conjunctiva may be little or very much injected—so much sometimes as to hide the sclerotic injection.

§ 67. *Exudation.* The aqueous humour is at first somewhat increased in quantity by exudation of serum. Exudation of lymph afterwards takes place. Lymph may be exuded on the surfaces or into the substance of the iris. The exudation from the anterior surface and from the pupillary margin may be directly seen. Most commonly the exudation appears first at the pupillary margin. On the anterior surface the lymph presents itself in drops, and fine flakes of it may often be seen in the aqueous humour, rendering it turbid.

§ 68. The lymph exuded at the pupillary margin soon becomes consolidated and organized, forming bands of adhesion between the margin of the pupil and the capsule of the lens—distorting the pupil, and sometimes also producing closure of it to a point.

§ 69. The mode in which closure of the pupil takes place appears to be this: the pupil having been in a state of contraction when the lymph was exuded, this

lymph, in consolidating, contracts and draws together more closely the margins of the pupil from which it has been exuded, and to which it is adherent.

§ 70. New vessels may make their appearance in the lymph exuded on the anterior surface of the iris, and also in that filling up the pupil.

§ 71. The lymph poured out at the pupillary circle, or at the margin of the pupil, forming bands of adhesion, becomes of a brown or yellow colour from the development of pigment in it.

§ 72. Though no distinct serous membrane can be demonstrated on the anterior surface of the iris, it thus, like the surface of organs covered with serous membranes when inflamed, pours out lymph which gives rise to adhesions; but what is peculiar is, that the adhesion which takes place is between the iris and capsule of the lens only, rarely between the iris and the cornea.

§ 73. *Parenchymatous inflammation of the iris* may be looked upon merely as a more intense degree of inflammation, in which, to exudation on the surface of the iris, there is added exudation into its substance, and that quickly and in large quantity.

§ 74. There is, in acute parenchymatous inflammation of the iris, greater vascular congestion both of the conjunctiva and sclerotica, together with congestion of the choroid, as may be inferred from the accompanying photopsia during life, and from its having been found on dissection after death that there was lymph on the inner surface of the choroid.

§ 75. Exudation into the substance of the iris takes place principally at the pupillary circle, or at the ciliary part, less frequently in the middle. It is manifested by the iris losing much of its natural appearance of structure, and becoming swollen, with its pupillary edge retracted, and its middle bolstered forward.

§ 76. Abscess is apt to form in such cases when acute. It appears as a small reddish yellow tubercle on the surface of the iris, generally near its pupillary edge, which bursting into the anterior chamber, gives rise to a small hypopyon. When the abscess is quite at the ciliary margin, it may evacuate itself externally through the sclerotica, close to the place of its junction with the cornea.

§ 77. *Effusion of blood.* Hemorrhagic exudation also occurs in inflammation of the iris. Besides the small quantity of blood often effused, forming a patch of greater or less size on the anterior surface of the iris, and tinging the exuded lymph, blood is sometimes poured out in such quantity as to fill the aqueous chambers.

§ 78. *Healing process.* As the congestion in iritis subsides, the progress of the absorption of the exuded matter is beautifully seen. Matter which has been recently exuded rapidly disappears; that which has become already organized into adhesions, having to undergo solution by a retrogressive metamorphosis, in order to be fitted for absorption, disappears more slowly; and in many cases the organization is so complete, that no such process of removal takes place. Thickening and change of structure of the iris from exudation into its substance, together with contraction of the pupil and obstruction of it with lymph, are very often permanent.

§ 79. Effused blood is in general readily absorbed, but after repeated effusions some remains unabsorbed, in the form of brown or black masses and patches, at the bottom of the anterior chamber and on the surface of the iris.

§ 80. *Inflammation of the lining membrane of the posterior chamber or uveitis.* Lymph may be exuded in large quantity into the posterior chamber, on the posterior surface of the iris, and on the anterior wall of the capsule of the lens. The source of this exudation is probably the vessels of the ciliary processes. See further on this head, *infra* § 89.

#### INFLAMMATION OF THE CHOROID AND RETINA.

§ 81. The anatomical characters of the inflammations of these structures cannot be directly observed during life; even the external redness of congestion can-

not be seen, as, different from the structures hitherto considered, the blood-vessels of those under consideration enter the eyeball at its posterior part. The cases moreover in which there has been opportunity for examination of the eye after death, have in general been such as presented the effects of past inflammation rather than the manifestations of inflammation in progress. But from analogy with what has been seen in inflammation of the other structures of the eye, and from what has been observed in the *post-mortem* examinations referred to, the anatomical characters of inflammation of the choroid and retina may be inferred with some degree of probability.

#### *Inflammation of the choroid.*

§ 82. *Congestion.* The capillary network on the inner surface of the choroid will be more or less injected, and the larger vessels proceeding to or from it, and which are principally seated on its exterior, will be enlarged, so that the choroid will be much increased in thickness, and will press inwards upon the retina and outwards upon the scleroticæ. There will be much redness at the posterior part of the scleroticæ, from the injection of the choroidal or short ciliary vessels.

§ 83. *Exudation.* Exuded matter will be deposited between the choroid and membrane of the pigment, raising and breaking up the latter, together with the delicate stratum bacillosum of the retina, or producing adhesions between the choroid and retina, with alteration of their texture. That something like what is here supposed does really occur is evidenced by what has been found in the few cases in which there has been opportunity for examining the eyes after death. Exudation may also take place between the choroid and scleroticæ.

§ 84. If there should be such intense congestion as is presented by the conjunctiva in purulent ophthalmia, a large quantity of matter will be exuded, and suppuration will be the result, with breaking up and disorganization of the whole interior of the eye. But before this, the other internal structures will have become implicated. The case will thus now be one of general ophthalmitis or ocular phlegmon.

#### *Inflammation of the retina.*

§ 85. *Congestion.* Redness of the inner surface of the retina from injection of the ramifications of the central artery of the retina.

§ 86. *Exudation.* Exuded matter between the retina and vitreous body, and also into the substance of the vitreous body, and into that of the retina itself. The effect of this is degeneration of the retina, the vitreous body, and subsequently of the posterior capsule of the lens.

#### INFLAMMATION OF THE LENSES OF THE EYE.

§ 87. These bodies being, like the cornea, non-vascular in the fully developed state, inflammation of them consists at first merely in exudation into or on them; the vascular congestion having its seat in adjacent parts.

#### *Inflammation of the crystalline body.*

§ 88. Inflammation of the crystalline body is first evidenced by opacity of the capsule, resulting from exudation into or on it. In the exuded matter new vessels may be developed. But where is the seat of the primary congestion? This appears to be different according as it is the anterior or the posterior wall of the capsule which is affected.

§ 89. In uveitis, § 80, the anterior wall of the capsule has often exuded matter deposited on it, in which new vessels are sometimes developed. This is the kind of case described as inflammation of the anterior wall of the capsule.

§ 90. Whilst inflammation of the anterior wall of the capsule belongs to the head of inflammation of the anterior segment of the eye, what has been viewed as inflammation of the posterior wall of the capsule comes under the head of inflammation of the posterior segment.

§ 91. The vessels described by Walther in the posterior wall of the capsule,

radiating from the centre, as indicative of inflammation of the posterior wall of the crystalline, cannot be, as has been supposed, the enlarged ramifications of the central artery of the vitreous humour, for these have become in the developed eye entirely obliterated. When vessels exist, they must be new formations, developed in exuded lymph. The author of this Paper has not seen any case in which red vessels were actually visible; but he has seen radiating streaks of opacity in the situation of the posterior wall of the capsule somewhat similar in arrangement to that of the vessels represented in Professor Walther's figure of inflammation of the posterior wall of the capsule.

§ 92. When the capsule of the lens is affected, as above described, the lens itself becomes more or less altered in consequence. It becomes opaque, dissolved, or is even the seat of suppuration. Vessels, it is alleged, have been observed shooting into it from the inflamed capsule.

§ 93. *Healing process in the crystalline body.* Wounds of the crystalline body, it is well known, are in the human eye very generally followed by opacity of the lens. In experiments on brutes this result has occurred in some cases only. As to the capsule, it becomes opaque in the seat of the wound, from exudation depending on the inflammatory congestion which has been occasioned in neighbouring structures by the wound, of which that of the crystalline is necessarily a part only. The wound of the capsule may thus unite. If the wound of the capsule is large, and does not unite, the opaque lens, it is known, dissolves and disappears.

§ 94. *Regeneration of the lens.* Pankl, Lowenhardt and Textor have repeated the experiments on regeneration of the lens in animals with success. Textor communicates some new cases of regeneration of the lens in man after operations for cataract. The proof that the newly-formed substance possesses the same intimate structure as the lens has at last been supplied by Valentia's microscopical investigation of the subject.\*

#### *Inflammation of the vitreous body.*

§ 95. This does not appear to take place without the posterior wall of the capsule of the lens also becoming affected. Again, though in the fully formed eye there may still exist hyaloid vessels, as described by Arnold and Van der Kolk, the congestion on which inflammatory changes of the vitreous body principally depend, is congestion of the vascular layer of the retina. § 86.

§ 96. The objective phenomena of inflammation, and its events, having thus been considered, as they occur in the different textures of the eye, those especially open to inspection during life, a general survey may now be taken of the modifications which those phenomena present, according to the structure affected.

§ 97. *Phenomena of congestion.* It has been seen that the more vascular conjunctiva, when inflamed, is redder than the less vascular sclerotica; and that the non-vascular cornea is not red at all, but that the congestion, and consequently the redness attending inflammation of it, are seated in adjacent parts. It has been seen, however, that redness of the cornea itself may be subsequently superadded by the development of new vessels in it. It has been seen, lastly, that in the coloured iris, the congestion is not manifested by redness, but by a colour a compound of the yellowish redness of a thin stratum of blood and the natural colour of the inflamed structure.

§ 98. *Phenomena of exudation.* It has been seen that exudation takes place more copiously from the conjunctiva and iris than from the less vascular sclerotica, and that, *ceteris paribus*, the exudation is in proportion to the degree of inflammatory congestion. It has been seen that the exuded matter is for the most part poured out from the surfaces of the conjunctiva and iris, and that there is little

\* Heule's Bericht, p. 279.



swelling and thickening, manifesting interstitial exudation, in comparison with the whole quantity of matter exuded; whereas in parenchymatous structures, the exuded matter being received into their interstices, exudation is manifested by more or less considerable swelling. It has been seen that exudation gives rise to phlyctenulæ and pustules on the surface of the cornea, but not so readily on that of the conjunctiva, in consequence of the difference in the thickness of the epithelium investing the two surfaces. Exudation, it has been seen, may take place into the cellular tissue underneath the conjunctiva in inflammation of that membrane, in which case there is the swelling called chemosis. Lastly it has been seen, that in congestion of the sclerotica there is comparatively little disposition to exudation, and that when it does take place, it is often rather into the neighbouring cornea than into the substance of the sclerotica itself—a peculiarity which seems to hold in the case of other fibrous structures, those around joints, for example, in rheumatic gout.

§ 99. *Phenomena of the extravasation of blood.* It has been seen that from the surface of the conjunctiva, when it is the seat of intense inflammatory congestion, slight hemorrhage readily occurs; but that in less intense inflammation, extravasation of blood occurs in the form of large patches of ecchymosis into the loose cellular tissue underneath the sclerotic conjunctiva. It has been seen that effusion of blood may take place from the surface of the inflamed iris, analogous to the hemorrhagic exudations of inflamed serous membranes—and that extravasation may also occur into its substance. But in this latter case, as also in the case of extravasation into the substance of the cornea, the spots of ecchymosis are small in comparison with those which present themselves in the looser subconjunctival tissue. The readiness with which bleeding takes place from the surface of the conjunctiva, when the seat of intense congestion, is explicable by the exposure to foreign contact of its delicate superficial capillary network in a state of great distension.

§ 100. *Phenomena of the events of inflammation.* A modification of the phenomena of the events of inflammation might *à priori* be presumed to occur in different structures, in consequence of that physiological difference which determines the mode of assimilation peculiar to each structure. That such a modification holds to a certain extent only, and is readily broken through by modifying influences, is shown by the formation of pus in very different structures, and by the circumstance that a kind of cellular tissue and blood-vessels are the new structures most commonly regenerated, whatever the original structure may be.

§ 101. An influence which manifestly modifies the manner in which the exuded matter is disposed of consists in the exposure or non-exposure of it to the contact of foreign bodies, including the external air. In the inflammations above passed in review it was seen, that the matter exuded on the surface of the conjunctiva in contact with the external air, tends to be converted into pus or puriform matter, whilst that exuded on the surface of the iris out of contact with air, is more disposed to be converted into tissue, forming bands of adhesion.

§ 102. The mode in which exposure to the contact of foreign bodies operates in determining suppuration is probably by their irritation keeping up the congestion, and thus causing exudation in large quantity and of a certain quality. In the cases in which the exuded matter is converted into pus, though not in contact with foreign bodies, the exuded matter has been deposited in large quantity, in consequence of the greatness of the congestion from other causes.

§ 103. In the cornea there may be observed what will perhaps be admitted as an exemplification of the influence of comparative quantity of exuded matter in the disposal of it. When exudation takes place slowly and in small quantity, it is developed into tissues; but when exudation takes place rapidly and in large quantity, suppuration results.

§ 104. The disposition of the iris to form adhesions with the capsule of the lens, as in the case of serous surfaces, presents a remarkable contrast to the indis-

position which, in common with other mucous surfaces, those of the inflamed conjunctiva have to adhere, even when in close apposition, except when abraded, and therefore no longer mucous surfaces. This appears to point to some peculiarity in the matter, considered as a blastema, exuded from mucous surfaces. Sometimes, indeed, the matter exuded on mucous surfaces presents itself in the form of pseudo-membranes (§ 24); these, however, do not become organized, like the pseudo-membranes of serous surfaces, but are eventually separated and thrown off like dead parts.

§ 105. In regard to the formation of adhesions between the iris and capsule of the lens (*synechia posterior*) it has been contended (Dr. G. Hoering, Ueber den Sitz und die Natur des grauen Staars, Heilbron, 1844,) that the condition for their formation is not exudation of plastic lymph from an inflamed iris alone, but that the capsule as well as the iris must be in a state of inflammation at the same time.

§ 106. However this may be as regards serous membranes generally, it is to be observed of the case under notice, that seeing inflammation of the anterior wall of the capsule of the lens consists at first merely in exudation into or on it, the exuded matter having its source in congestion of neighbouring parts, there can scarcely be any difference whether the lymph is exuded from the pupillary margin of the iris, or whether it is exuded from the same source as it is in those cases which are considered as properly coming under the head of anterior capsulitis, § 89. And it must be admitted, that *synechia posterior* occurs in cases in which it would be rather too much to say, that in addition to the iritis, there was anterior capsulitis also.

§ 107. On the other hand, there is great indisposition to the formation of *synechia anterior*, even when the corresponding surfaces of both iris and cornea are inflamed and in contact, except when there is abrasion of the corneal surface.

§ 108. *Mortification and ulceration.* Of the different structures of the eye above considered, it has been seen that the cornea is that most prone to mortification and ulceration, though perhaps the changes which sometimes take place in the lens and vitreous body might properly be referred to this head.

## II. SUBJECTIVE PHENOMENA OF INFLAMMATION OF THE DIFFERENT STRUCTURES OF THE EYE.

§ 109. In entering on this part of the subject, it is, in the first place, necessary to distinguish between the morbid sensations depending on perversion of common sensibility and those depending on perversion of special sensibility.

### § 110. *Morbid sensations depending on perversion of common sensibility.*

1st. *Heat.* The subjective increase of heat, or the patient's sensation of increased heat, depends partly on the objective increase of heat, or that actual increase of heat ascertainable by the thermometer, and partly on an increased susceptibility of the sensitive nerves of the part affected.

Though the more vascular and nervous a part is, the greater in general is the increase of heat, both objective and subjective, in it when inflamed, it is at the same time to be remembered, that there is often greater general reaction and greater inflammatory fever, and consequently greater production of heat in the system in general, from inflammation of parts but poorly supplied with vessels and nerves.

2d. *Pain.* This is owing to the irritation of the nerves of common sensation of the part, already in a state of excitement, produced by the pressure exerted by the congested vessels and the exuded matter. Other parts than that which is the immediate seat of the inflammation may be sympathetically affected with pain.

The pain accompanying inflammation of parts of loose texture, and which have scope to swell, is in general not severe; but in parts of dense texture, or which are so situated that they cannot yield to distension by the accumulated blood or exuded matter, the pain is very severe. When there is much throbbing in an inflamed part, (the nature of which was explained in a former paper,) the attending pain is aggravated at each pulsation, in consequence of the increase of pressure occasioned at the time by the afflux of blood.

§ 111. *Morbid sensations depending on perversion of special sensibility.*

When nervous structures endowed with special sensation are irritated, the sensation produced is not pain, but various modifications of the sensation peculiar to the structure, and this whatever be the irritating agent. Thus when the retina is in a morbidly sensible state, irritation of it by light gives rise to a dazzling glare, which is so distressing, that the patient seeks to protect the eye against light. This constitutes intolerance of light, or photophobia. But even in the dark the same dazzling glare, or various kinds of luminous spectra, may be produced by pressure, &c., and that in a degree more or less distressing, according to the morbid sensibility of the retina, and the intensity of the pressure or other irritating cause. This constitutes photopsia.

Of course actual pain may be experienced at the same time, in consequence of parts endowed with common sensibility being at the same time subjected to the irritating cause which determines the morbid sensations in the retina.

*Morbid sensations depending on perversion of common sensibility, accompanying inflammation of the different tissues.*

§ 112. *Conjunctiva.* Like other mucous membranes close to the natural apertures of the body, the conjunctiva is endowed with a high degree of common sensibility; but being loose in texture the pain which attends inflammation of it is not very severe. There is, however, considerable heat.

§ 113. The most characteristic pain is like that produced by a foreign body in the eye—a sensation which attends inflammation of other mucous membranes near the surface of the body. The sensation as if a foreign body were in the eye is owing to enlargement of the vessels on the one hand, and to increased sensibility of the conjunctiva on the other.

§ 114. Attendant on inflammation of the conjunctiva there are also itchiness and smarting at the edges of the eyelids, with occasional stitches of pain shooting from them.

§ 115. *Sclerotics.* Very severe pain of a rheumatic character around the orbit, in the temples, &c., is, it is well known, a characteristic attendant on sclerotic inflammation or congestion, owing either to accompanying congestion in the parts mentioned, or to nervous irradiation.

§ 116. *Cornea.* The sensation in the cornea itself is one of pressure. But as inflammation of the cornea is attended with injection of the conjunctiva and sclerotics, there may be also the sensation of a foreign body in the eye peculiar to the former, and the rheumatic pain peculiar to the latter.

§ 117. *Iris.* When the iris is inflamed, there is necessarily more or less sclerotic congestion, hence the sclerotic rheumatic pain which so often accompanies iritis. As to the pain within the eyeball itself, it may be accounted for as much perhaps by the distension to which the exterior tunics are subjected by the increased accumulation of blood and fluids in the interior of the eye, as by supposing it to be seated in the iris, which indeed does not appear to possess much sensibility—its numerous nerves appear to be for the most part motor.

§ 118. *Choroid.* The choroid itself does not appear to be endowed with any sensibility. The pain which attends inflammation of it appears to be owing to the distension of the eyeball, and to attending congestion of other parts.

§ 119. *Retina.* The morbid sensations depending on perversion of common sensibility, which may attend inflammation of the retina, have not as has been said their seat in the retina, but are merely owing to distension of the eyeball, and accompanying congestion of other parts.

*Morbid sensations depending on perversion of the special sensibility of the retina.*

§ 120. The appearance of a gauze or mist, or "a skin with veins in it" appears to be the proper subjective effect of the congestion and exudation in inflammation of the vascular layer of the retina.

§ 121. The other special morbid sensations, photopsia, and a morbid sensibility to common impressions, photophobia, occur rather as accompaniments of inflammation of other structures of the eye than of the retina itself. Thus the morbid sensibility of the retina on which intolerance of light depends is an accompaniment of those acute inflammations in which the cornea is especially involved. Luminous spectra again appear to be especially occasioned in inflammation of the choroid, by the pressure arising from the congestion and exudation. This is illustrated by the well-known effect of pressure with the point of the finger on the exterior of the eyeball.

## DR. ELLIOTSON AND MESMERIC DIAGNOSIS.

In the article on Mesmerism, in our last Number, the reader will find at p. 484, the following statement: "We have, moreover, scientific and erudite men gravely proclaiming somnambulists to be the surest prescribers for diseases, and maintaining that practitioners should hold them in readiness, as guides and directors, in the management of obscure cases: and the British metropolis contains at least one physician who indulges in these lamentable extravagances:" and it was implied that Dr. Elliotson was the physician alluded to. We have since learned, on the best authority, that of Dr. Elliotson himself, that we were entirely mistaken in making this statement; and we now express our sincere regret for the error we committed in so doing. Our mistake originated in the first place, in the misinterpretation of a passage in his address to the Phrenological Association in the summer of 1842, and published in the October number of the *Zoist* of the same year; and our mistaken impression seemed to be confirmed by the subsequent detail of certain cases communicated to Dr. Elliotson and published by his authority in the *Zoist*, in which the power of a somnambulist to discriminate and prescribe for disease is, in several instances, attested. It gives us sincere pleasure to know that Dr. Elliotson does not himself "indulge in these lamentable extravagances;" and that, in publishing the cases referred to he merely intended to record the statement of others with a view to promote inquiry.

## BOOKS RECEIVED FOR REVIEW.

1. A Treatise on the Diseases and Special Hygiene of Females. By Colomhat de l'istère. Translated from the French, with additions, by C. D. Meigs, M.D. &c.—Philadelphia, 1845. 8vo, pp. 780.
2. Transactions of the Provincial Medical and Surgical Association. Vol. XIII. 8vo, pp. 416.
3. Chemistry, Meteorology, and the Function of Digestion, considered with reference to Natural Theology. (Bridgewater Treatise.) By W. Prout, M.D. F.R.S. Third Edition.—London, 1845. 8vo, pp. 516. 15s.
4. A System of Surgery. By J. M. Chelius. Translated from the German, by J. F. South. Parts I, II, III. 3s. each.
5. Contributions to the Medical History and Treatment of sexual Diseases. By J. H. Robertson, M.D.—Glasgow, 1845. 8vo, pp. 80.
6. Sixth Annual Report of the Registrar General of Births, Deaths, and Marriages in England.—London, 1845. 8vo, pp. 668.
7. Outlines of Chemistry for the use of Students. By W. Gregory, M.D.—London, 1845. 8vo, pp. 568. 12s.
8. Repertorium der K. K. Oesterreichischen Medicinal-Verordnungen. Von T. Jurié, M.D.—Wien, 1843. 8vo, pp. 250.
9. Observations on the Education and Examination for Degrees in Medicine, as affected by the New Medical Bill. By Richard Quain, F.R.S.—London, 1845. 8vo, pp. 60.
10. Handbuch der Heilmittellehre. Von Dr. Fr. Oesterlen.—Tubingen, 1845. 8vo, pp. 1062.
11. The Physiology of Digestion considered with relation to the principles of Dietetics. By Andrew Combe, M.D. Fifth Edition, revised and enlarged.—Edinburgh, 1845. 8vo, pp. 154. 2s. 6d.
12. Glanders and Farcy in the Horse. By W. Percivall, Surgeon.—London, 1845. 8vo, pp. 262.
13. On the present state of Therapeutical Inquiry. By James Arnott, M.D.—Brighton, 1845. 12mo, pp. 58.
14. Objections to Animal Magnetism, with remarks on Mr. Hall's Lectures.—Reading, 1845. 8vo, pp. 24.
15. The Power of the Soul over the Body, considered in relation to health and morals. By G. Moore, M.D.—London, 1845. 8vo, pp. 306. 7s. 6d.
16. A Practical Treatise on the Special Diseases of the Skin. By C. M. Gilbert. Second Edition. Translated from the French by E. Sheppard, Surgeon.—London, 1845. 8vo, pp. 362. 7s. 6d.
17. The Principles and Practice of Dental Surgery. By C. A. Harris, M.D. Professor of Dental Pathology in Baltimore. Second Edition.—Philadelphia, 1845. 8vo, pp. 600.
18. Observations upon the Employment of Compression in Aneurism. By O'B. Bellingham, M.D.—Dublin, 1845. 8vo, pp. 14.
19. Vestiges of the Natural History of Creation. Fourth Edition.—London, 1845. 8vo, pp. 498. 7s. 6d.
20. Memoir of the Life of a Country Surgeon.—London, 1845. 8vo, pp. 22.
21. The London Medical Directory, 1845.—London, 1845. 8vo, pp. 180. 8s. 6d.
22. A Guide to the Use of the Buxton Waters. By W. H. Robertson, M.D.—London, 1845. 12mo, pp. 32.
23. The Gymnastical Orthopaedical Institution in Dessau, its management and efficaciousness. By Dr. J. A. L. Werner.—Dessau, 1845. 8vo, pp. 48.
24. Observations on the Mechanism and Diagnostic Value of the Friction Vibrations in Peritonitis. By R. Spittal, M.D. (From the Edinb. Monthly Journal.) 1845. 8vo, pp. 20.
25. Observations on the Nature and Treatment of the more important Diseases of the Nervous System. By a Physician. (Dr. Blackmore).—Bath, 1845. 12mo, pp. 20.
26. Prize Clinical Reports of Surgical Cases treated at the Queen's Hospital, Birmingham. By John Moore.—London, 1845. 8vo, pp. 122. 2s. 6d.
27. Practical Notes on Insanity. By J. B. Steward, M.D.—London, 1845. 8vo, pp. 63.
28. Remarks on Physicians, Surgeons, Druggists, and Quacks. By Surgeon Snipe.—Halifax, 1845. 8vo, pp. 66.
29. Mental Maladies. A Treatise on Insanity. By E. Esquirol. Translated from the French, with additions.—Philadelphia, 1845. 8vo, pp. 496.
30. Hindustani Version of the London Pharmacopœia, ed. 1836. By G. G. Spilisbury, Surgeon, and Samachurn Dutt, sub-assistant surgeon, 1841. Done into the Persian, with an Appendix. By F. J. Moust, M.D.—Calcutta, 1845. 8vo.
31. Guy's Hospital Reports, April, 1845. 6s.
32. Practical Remarks on some exhausting Diseases, particularly those incident to Women. By Sir James Eyre, M.D.—London, 1845. 8vo, pp. 75. 4s.
33. Manuel Topographique et Médicale de l'Etranger aux Eaux d'Aix-en-Savoie. Par C. Despine (fil), M.D.—Annecy, 1843. 8vo, pp. 234.
34. Seven Lectures on Somnambulism. Translated from the German of Dr. Wrenholt, with Notes, &c. by J. Colquhoun, Esq.—Edinburgh, 1845. 12mo, pp. 220.
35. The Secrets of Prevost. Translated from the German by Mrs. Cooke. 1845. 8vo.
36. Systematische Darstellung des Medicinal-Dienstes des Oesterreichischen Kaiserstaates. Von Dr. J. Müller.—Wien, 1844.
37. Remarks on Clause 36 of Sir James Graham's Medical Bill.—London, 1845.
38. A Case of Cesarean Operation, with remarks on Puerperal Metritis. By J. M. Coley, M.D.—London, 1845. 8vo, pp. 30.

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BRITISH AND FOREIGN  
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PART FIRST.

Analytical and Critical Reviews.

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ART. I.

*Anatomical and Pathological Observations.* By JOHN GOODSIR, F.R.S.E., Demonstrator of Anatomy in the University of Edinburgh; and HARRY D. S. GOODSIR, M.W.S., Conservator of the Museum of the Royal College of Surgeons, Edinburgh.—*Edinburgh*, 1845. 8vo, pp. 128; with Nine Lithographic Plates.

WE have had the pleasure, on more than one previous occasion, of drawing the attention of our readers to the meritorious labours of Mr. John Goodsir, whose researches have already gained for him a high rank among the cultivators of the new field, which the achromatic microscope has opened to the anatomist and physiologist; and whose zeal, accuracy, and sagacity give a high promise for the future. It has rarely—we think we may say *never*—been our good fortune to meet with a brochure of the modest pretensions of the one before us, containing so large an amount of original information, put forth in so simple and concise a form. Portions of it have been already presented at various times to the scientific world; but the greater part has been hitherto unpublished; and what has before seen the light has been improved in form, by the extension of the author's views on collateral subjects. He has associated with his own papers, in this publication, some valuable contributions by his brother, Mr. Harry Goodsir, who is zealously devoting himself to a similar line of inquiry; and whose return with the spoils and trophies of the Arctic Expedition on which he has recently proceeded, may be expected some three years hence.

Our sense of the value of the contributions of this “*par nobile fratrum*” to Anatomical and Pathological *science*, induces us to enter into a more detailed analysis of their Essays, than we should have otherwise thought it necessary to do; considering the general absence, in these memoirs, of any direct practical bearing.

The first paper, entitled "Centres of nutrition," contains what may be called the leading idea of the whole series, which is thus expressed by the author:

"By centres of nutrition I understand certain minute cellular parts existing in the textures and organs. With many of these centres, anatomists have been for some time familiar; but with a few exceptions have looked upon them as embryonic structures. I am inclined to believe in the general existence of such centres, for a certain period at least, in all textures and organs; and to this I wish to direct attention at present.

"The phenomena presented by these centres incline me to regard them as destined to draw from the capillary vessels, or from other sources, the materials of nutrition, and to distribute them by development to each organ or texture after its kind. In this way they are to be considered centres of germination; and I have elsewhere named them germinal spots,—adopting the latter term from the embryologists.

"The centre of nutrition with which we are most familiar is that from which the whole organism derives its origin,—the germinal spot of the ovum. From this all the other centres are derived, either mediately or immediately; and in directions, numbers, and arrangements, which induce the configuration and structure of the being." (p. 1.)

"A nutritive centre, anatomically considered, is merely a cell, the nucleus of which is the permanent source of successive broods of young cells, which from time to time fill the cavity of their parent, [and, carrying with them the cell-wall of the parent] pass off in certain directions, and under various forms, according to the texture or organ of which their parent forms a part.

"There is one form in which nutritive centres are arranged, both in healthy and morbid parts, which is frequently alluded to in the following chapters, and which may be named a germinal membrane. In a germinal membrane, the nutritive or germinal centres are arranged at equal or variable distances, and in certain directions, in the substance of a fine transparent membrane. A germinal membrane is occasionally found to break up into portions of equal size, each of which contains one of the germinal centres. From this it is perceived that a germinal membrane consists of cells with their cavities flattened, so that their walls form the membrane by cohering at their edges, and their nuclei remain in its substance as the germinal centres." (pp. 2-3.)

We have ourselves been gradually led to similar views; of which our readers will find indications in our critique upon Mr. Addison's *Researches* in our last Number, (p. 124.) And in particular regarding the "germinal membrane" of Mr. Goodair, which is the same thing with the "basement membrane" of Mr. Bowman, we may state that we have, in common with the former observer, frequently observed indications of nuclei and even of cells in some parts of its substance, whilst other portions, even of the same continuous layer, appeared perfectly homogeneous, as described by the latter. Hence we have little hesitation in assenting to Mr. Goodsir's opinion, that this membrane must be regarded as furnishing the germs of the epithelial cells, which lie upon its surface, or which fill the cavities of the tubuli or cæcal follicles which it forms. In fact, we do not see where else the germs of these cells *can* come from, if they are formed from germs at all; since it is impossible that the cells which are being continually thrown off from the superficial layers should be the parents of the new ones that are being developed in the deepest, and that are springing (as it were) from the surface of the germinal or basement membrane.—In the second Essay, "On the structure and functions of the intestinal villi," we

meet with the following additional hints, in regard to the origin of the epithelium from the germinal membrane :

"The germinal membrane, which not only forms the outer membrane of the follicles, under the epithelia, but also the underlying membrane of the villi, contains in its substance germinal centres of an oval form, situated at pretty regular distances. From these the epithelium appears to be reproduced during the intervals of absorption, as stated in the first chapter. During this process of development, the primary membrane appears to split into two laminæ, the epithelia passing out from its nuclei between these. This would account for the epithelia, particularly the prismatic and conical, adhering by their free extremities." (p. 10.)

We believe it would be the most correct to say, that the basement or germinal membrane is continually giving origin, beneath its free or most superficial layer, to new crops of epithelium-cells; whilst it is as continually being renewed, at its attached surface, from the materials supplied by the blood.

With the main subject of the second Essay, we have made our readers acquainted on a former occasion; and we need here only state, that the author has to our minds most successfully proved, that the act of selective absorption is to be attributed to the development of certain cells situated in extremities of the villi, which draw into themselves by their own growth the materials they are afterwards to yield to the absorbent vessels. It has amused us not a little to read discussions in the French Academy, as to the question of priority in the announcement of a very imperfect idea of a somewhat similar kind; both claimants seeming to be equally ignorant, that Mr. Goodsir had published a much more complete account of the process, some months anteriorly to the earliest period specified by themselves.

In the third Essay, on "Absorption, ulceration, and the structures engaged in these processes," Mr. Goodsir has applied the doctrines of cell-development to the pathological phenomena included under these heads. In the study of the normal processes of absorption, nutrition, and secretion, we have had to transfer our attention from the vessels, which simply convey the materials, to the non-vascular portions of the tissues, which are really the active agents in the conversion and application of these materials. We still, however, as Mr. Goodsir remarks, retain in full force our old belief in the active absorbing powers of the vessels, and in the agency of the capillary and lymphatic vessels, in removing parts and modelling the forms. He does not yet attempt to give a complete elucidation of the subject, on the basis of the views just alluded to; but contents himself with adducing certain facts, which plainly indicate the path to be pursued in working out the inquiry. These few facts are, to our minds, however, of the highest interest, and most pregnant character; and we cannot hesitate in transferring them to our pages :

"A rapidly-extending ulcerated surface appears as if the textures were scooped out by a sharp instrument. The textures are separated from the external medium by a thin film. This film is cellular in its constitution, and so far it is analogous to the epidermis or epithelium. It is a peculiarly endowed cellular layer, which takes up progressively the place of the subjacent textures, these being prepared for dissolution, either by the state of the system, the condition of the part, or by some influence induced by the contiguity of the new formation. Carrying out,



therefore, the principles at present regarded as regulating the reciprocal functions of textures and vessels, the subjacent textures disappear in consequence of a disturbance of their own forces, consequent upon the appearance of new forces residing in the cellular layer. The disturbance and gradual annihilation of the natural forces residing in the subjacent textures, is indicated by the gradual disappearance of these. That new forces, not formerly existing in the part, are developed, appears from the formation of the cells of the cellular layer. As these appear in rapid succession, and disappear as rapidly, the subjacent textures also disappear, either by previous solution and subsequent absorption by the properties and powers of the former; or under the peculiar circumstances of inflammatory action by the more vigorous growth of the former, monopolizing the resources of the part, the latter dissolving and disappearing by the usual channels of the returning circulation, more rapidly, but according to ordinary laws.

"From this view of the process, it appears that so far from consisting in a diminution of the formative powers of the part, such a progressive ulceration is actually an increase of it. The apparent diminution is a consequence of the extremely limited duration of existence of the cells of the absorbent layer, which die as rapidly as they are formed, disappearing after dissolution, partly as a discharge from the surface, but principally through the natural channels by which the debris of parts which have already performed their allotted functions, are taken up into the organism." (p. 15.)

By this view of the processes of ulceration, we substitute, as Mr. Goodsir very justly remarks, for the hypothetical or aggressive power of absorption ascribed to the veins and the lymphatics, a power which is known to exist in the organic cell during the progress of its growth; and we limit the function of the vessels to that which alone they are known to exert, in health as in disease,—namely, the removal of the effete matter actually set free from the tissues. The general doctrine here upheld derives great support from Mr. Goodsir's observations upon the process of ulceration in bone and articular cartilage:

"When a portion of dead or dying bone is about to be separated from the living, the Haversian canals which immediately bound it are enlarged contemporaneously with the filling of their cavities with a cellular growth. As this proceeds, contiguous canals are thrown into one another. At last, the dead or dying bone is connected to the living by the cellular mass alone. It is now loose, and has become so in consequence of the cellular layer which surrounds it presenting a free surface, and throwing off pus.—In this process, the veins and absorbents act on the osseous texture of the walls of the Haversian canals in no other way than in the natural state of the part. They are mediate, not immediate instruments of absorption. It is the cells of the newly-formed cellular mass, contained in the Haversian canals, which are the immediate cause of the removal of the bone, either by taking it up as nourishment, and substituting themselves in its stead; the bone being prepared for this absorption in a manner analogous to that which occurs in the digestion of food previously to absorption of it by the cells of the gut; or by the active formation of the cells in the new substance monopolizing the resources of the part, and so inducing the disappearance of the osseous texture by the natural channels of the returning circulation.—The process by which a slough in the soft parts is separated from the living textures, is similar to that which occurs in bone." (p. 16.)

Considering the really extra-vascular nature of the ultimate elements of the osseous tissue, it appears to us that the process of absorption must be essentially the same in bone as it is in those shells of mollusca and crustacea, in which a removal of matter was long since proved to take

place in certain cases. In both cases it must be a purely *superficial* action; but the surface is extended, by the peculiar structure of bone, from the exterior, through the medullary cavity, and the cancelli and Haversian canals, which are prolongations of it. Mr. Goodsir's views as to the nature of absorption derive powerful support from the circumstances under which that process takes place in cartilage; for it is now well known, that this tissue is for the most part destitute of blood-vessels, only possessing them when its mass is bulky, or when it is undergoing change into bone. "It is evident, therefore, that in the process of ulceration in cartilage, it cannot be the usual blood-vessels of the part, which are the active agents. Still less likely is it that lymphatics, the existence of which has never been asserted in this texture, are the absorbing instruments." The following are, according to Mr. Goodsir, the appearances presented by a thin section made at right angles through the articular cartilage of a joint, at any part where it is covered by gelatinous membrane in scrofulous disease, or by false membrane in simple inflammatory conditions of the joint:

"On one edge of the section is the cartilage unaltered, with its corpuscles natural in position and size. On the opposite edge is the gelatinous, or false membrane, both consisting essentially of nucleated particles, intermixed, especially in the latter, with fibres and blood-vessels; and, in the former, with tubercular granular matter. In the immediate vicinity, and on both sides of the irregular edge of the section of cartilage, where it is connected to the membrane, certain remarkable appearances are seen. These consist, on the side of the cartilage, of a change in the shape and size of the cartilage-corpuscles. Instead of being of their usual form, they are larger, rounded, or oviform; and instead of two or three nucleated cells in their interior, contain a mass of them. At the very edge of the ulcerated cartilage, the cellular contents of the enlarged cartilage-corpuscles communicate with the diseased membrane by openings more or less extended. Some of the ovoidal masses in the enlarged corpuscles may be seen half released from their cavities by the removal of the cartilage; and others of them may be observed in the substance of the false membrane, close to the cartilage, where they have been left by the entire removal of the cartilage which originally surrounded them.—If a portion of the false membrane be gradually torn off the cartilage, the latter will appear rough and honeycombed. Into each depression on its surface, a nipple-like projection of the false membrane penetrates. The cavities of the enlarged corpuscles of the cartilage open on the ulcerated surface by orifices of a size proportional to the extent of absorption of the walls of the corpuscle, and of the free surface of the cartilage.—The texture of the cartilage does not exhibit, during the progress of the ulceration, any trace of vascularity. The false membrane is vascular, and loops of capillary vessels dip into the substance of the nipple-like projections which fill the depressions on the ulcerated surface of the cartilage; but, with the exception of the enlargement of the corpuscles, and the peculiar development of their contents, no change has occurred in it. A layer of nucleated particles always exists between the loops of capillaries and the ulcerated surface. The cartilage, where it is not covered by the false membrane, is unchanged in structure. The membrane generally adheres with some firmness to the ulcerating surface; in other instances it is loosely applied to it; but in all, the latter is accurately moulded to the former." (pp. 18-19.)

Sometimes, especially in scrofulous disease, the cartilage is attacked on its attached as well as on its free surface; and the process is essentially the same in the former case as in the latter, the vascular membrane with its nipple-shaped processes being derived from the tissue of the bone.

The fifth Essay, on "Secreting structures," is nearly identical with a paper

which was published by Mr. Goodsir in the 'Transactions of the Royal Society of Edinburgh' for the year 1842, and which was noticed by us very shortly afterwards, (see Vol. XIV, p. 164.) We need not, therefore, enter into any detailed analysis of it; but shall content ourselves with noticing the modifications which it has undergone, subsequently to its first publication. It will be remembered by such of our readers as are conversant with the recent history of physiology, that a hypothesis was announced, some years since, by Purkinje, assigning to the nucleated epithelium of the gland-ducts the chief agency in the secretory function; but he made no statement to show that he had verified this hypothesis by observation. The reception of it as a part of our present system of belief is founded upon the observations of others; among whom Mr. Goodsir holds a very conspicuous place. Mr. Bowman was seeking, in the structure and functions of the human body, for a corroboration of this theory, whilst Mr. Goodsir was collecting a large amount of similar evidence from the ample stores furnished by comparative anatomy. In the original Memoir, the opinion was expressed, that as the nucleus is the reproductive organ of the cell, it has no direct concern in secretion, and that the cell-wall is the real instrument in the operation. Subsequent inquiry, however, has induced Mr. Goodsir to change that opinion; and we now find him advancing the doctrine, which had been independently advanced by Mr. Simon on other grounds, (see our last Number, p. 164,) that the *secretion of the cell is a product of the nucleus.*

"Since the publication of my paper on the secreting structures, in the Transactions of the Royal Society of Edinburgh, in 1842, I have satisfied myself that I was in error, in attributing to the cell-wall the important function of separating and preparing the secretion contained in the cell-cavity. The nucleus is the part which effects this. The secretion contained in the cavity of the cell appears to be the product of the solution of successive developments of the nucleus, which in some instances contains in its component vesicles the peculiar secretion, as in the bile-cells of certain mollusca, and in others becomes developed into the secretion itself, as in the seminal cells. In every instance, the nucleus is directed towards the source of nutritive matter, the cell-wall is opposed to the cavity into which the secretion is cast. This accords with that most important observation of Dr. Martin Barry, on the function of the nucleus in cellular development." (p. 33.)

Mr. Goodsir's observations, however, not only go to confirm the general doctrine of secretion by cells; they also throw important light upon the minute structure and development of glands. He shows that there are at least two different modes in which the secreting cells may be produced and arranged; viz. in *acini*, and in *follicles*. In the former case, the history of which he has particularly investigated in the testicle of *squalus cornubicus*, during the period of sexual vigour, the following appear to be the leading features of the process of development. A single nucleated cell is seen attached to the side of the duct, and causing a protrusion of its outer membrane;—this enlarges and projects more, and is seen to contain a few young cells grouped in a mass within it;—by a further enlargement it is removed from the duct, but remains connected with it by a hollow pedicle, being pyriform in shape, closed, and filled with nucleated cells;—and when its contents have arrived at maturity, the original parent-cell (now become merely the covering of the acinus, or collection of secreting cells) either dissolves away or discharges its contents through

the pedicle into the duct. There is, consequently, in glands of this type, a continual development of new acini, which originate in points termed by Mr. Goodsir the "germinal spots of the gland." In glands of the follicular type, the early history may perhaps be the same as in the preceding case; but instead of the functions of the primary cell being brought to a close when its first crop of secreting cells is matured, it remains in a constant state of development and growth. Thus in the liver of *carcinus menas*, and other crustacea, each of the follicles may be observed to possess the following structure:

"The blind extremity of the follicle is slightly pointed, and contains in its interior a mass of perfectly transparent nucleated cells. From the blind extremity downwards, these cells appear in progressive states of development. At first they are mere primitive nucleated cells; further on they contain young cells; and beyond this they assume the characters of primary secreting cells, being distended with yellow bile, in which float oil-globules; the oil in some instances occupying the whole cell. Near the attached extremity of the follicle, an irregular passage exists in the midst of the cells, and allows the contents of the cells which bound it to pass on to the branches of the hepatic duct." (p. 30.)

Here it appears almost indubitable, that the development of the secreting cells takes place from a "germinal spot," situated at the blind extremity of the follicle. But in other glands, in which the follicles are greatly elongated so as to form tubes,—as in the human kidney,—Mr. Goodsir believes that the "germinal spots" are more uniformly diffused over the whole internal surface of the membranous wall. We should rather be inclined to say that there is no "germinal spot" at all; since in our apprehension this spot consists of an aggregation, in one point, of reproductive granules which are elsewhere separated and diffused. A similar variation is seen in numerous other instances;—certain vegetable cells having a distinct nucleus, cytotblast, or germinal spot; whilst others have the reproductive granules scattered through their interior; and even the germinal vesicle of animals, of which the germinal spot is usually so characteristic a feature, occasionally presents this latter condition.

But it would seem that, in the follicular glands, there is not only a successive development of secreting cells within the follicle, but the wall of the follicle itself is in a state of progressive growth; acquiring additions to its length at its blind extremity, and becoming absorbed at its attached extremity.

"Mr. H. S. Goodsir, in a paper on the development and metamorphoses of *Caligus*, read in the Wernerian Society, April 1842, has stated that the wall of the elongated and convoluted follicle, which constitutes the ovary in that genus, grows from its blind to its free extremity, at the same rate as the eggs advance in development and position. A progressive growth of this kind would account for the steady advance of its attached contents, and would also place the wall of the follicle in the same category with the primary vesicle, germinal membrane, or wall of the acinus, in the vesicular glands." (p. 31.)

Bringing together under one category, as we think he had a perfect right to do, the ordinary process of secretion, and the production of spermatozoa,—as taking place under conditions precisely analogous,—Mr. Goodsir had classified the products of the secreting action under the three following heads:—1st, the matter formed in the primary secreting cell-cavities;—2d, a mixture of fluid formed in these cell-cavities with the de-

veloped or undeveloped nuclei of the cells themselves ;—and 3d,—a number of secondary cells passing out entire. He has since had an opportunity of verifying, and to an extent which he did not fully anticipate, the remarkable vital properties of the secretions of the third order just referred to.

“The distinctive character of these secretions is, that, when thrown into the cavity of the gland, they consist of entire cells, instead of being the result of the partial or entire dissolution of the secreting cells. It is the most remarkable peculiarity of this order of secretions, that, after the secreting cells have been separated from the gland, and cast into the duct or cavity, and therefore no longer a component part of the organism, they retain so much individuality of life, as to proceed in their development to a greater or less extent in their course along the canals or duct, before they arrive at their full extent of elimination.—The most remarkable instance of this peculiarity of secretions of this order, is that discovered by my brother, and recorded by him in a succeeding chapter. He has observed that the seminal secretion of the decapodous crustaceans undergoes successive developments in its course down the testis, but that it only becomes developed into spermatozoa after coitus, and in the spermothea of the female. He has also ascertained that, apparently for the nourishment of the component cells of a secretion of this kind, a quantity of albuminous matter floats among them, by absorbing which they derive materials for development, after separation from the walls of the gland.—This albuminous matter he compares to the substance which, according to Dr. Martin Barry's researches, results from the secretion of certain cells of a brood, and affords nourishment to their survivors. It is one of several instances in which cells do not derive their nourishment from the blood, but from parts in their neighbourhood which have undergone solution ; and it involves a principle which serves to explain many processes in health and disease.” (p. 34.)

In Mr. H. S. Goodsir's paper, “On the testis and its secretion in the Decapodous Crustaceans,” a great variety of curious facts are stated as the result of the author's examination of the subject ; but as the one quoted in the preceding extract is the most important in a physiological point of view, we shall pass on to the next essay, “On the structure of the serous membranes,” by Mr. John Goodsir. He agrees with Mr. Bowman as to the existence of a layer of basement membrane, between the single layer of epithelial cells and the vascular sub-serous areolar tissue. But he considers the basement membrane, here as elsewhere, as itself consisting of flattened cells, with persistent nuclei, which give it the character of a “germinal membrane.”

“The germinal membrane does not in general show the lines of junction of its component flattened cells. These appear to be elongated in the form of ribands ; their nuclei, or the germinal spots of the membrane, being elongated, expanded at one extremity, pointed at the other, and somewhat bent upon themselves. The direction of these flattened cells and nuclei is the same in any one part of the membrane, this direction being in general parallel to the subjacent blood-vessels, in the direction of which they exist in the greatest numbers. The germinal spots are bright and crystalline, and may, or may not, according to their condition, contain smaller cells in their interior. They are not to be confounded with the fibres of the areolar texture, or with elastic filaments, or with the nuclei of the capillary vessels of the subserous texture, or with paler, ovoidal, somewhat indistinct cells, scattered throughout that texture, and which appear to be connected with the common areolar fibres. These flattened riband-shaped scales, and bright crystalline nuclei, which form the germinal or basement membrane of the serous coat, appear to be identical with the objects described by Valentin, Pappenheim, and Henle, and named by the latter nucleated fibres.” (p. 42.)

The following remarks fully coincide with the ideas that we had independently formed, on the curious point to which they relate :

"I have been in the habit of considering the highly vascular fringes and processes of the synovial membranes as more active in the formation of epithelium, and therefore more closely allied to the secreting organs, than other portions of these membranes. If this be the case, Clopton Havers was not mistaken in his ideas regarding the functions of these vascular fringes. They are situated where they cannot interfere with the motions of the joint. They hang into those parts of the cavity best fitted for containing and acting as reservoirs of synovia; and their high vascularity, and the pulpy nature of their serous covering, tend to strengthen this opinion." (p. 43.)

With the following opinions, also, on the subject of inflammation, we need scarcely say that we heartily concur :

"The phenomena attending inflammatory action of the membranes are highly interesting. The capillaries are all on one side of the membrane, and yet the serum and lymph are on the other. The capillary vessels in healthy action have no power in themselves of throwing out any of their contents. They do not secrete in virtue of any power inherent in themselves. Do they acquire this power during inflammation? Or will any of the hypotheses of effusion account for the lymph and serum being on the free surface of the serous membranes, and so little, if any, in the subserous textures?

"I do not see how we can, in the present state of the science, account for phenomena of this kind, by referring them to actions of the extreme vessels. We must look for an explanation, I am inclined to believe, in a disturbance of the forces which naturally exist in the extra-vascular portions of the inflamed part." (p. 43.)

The short paper which succeeds, on the "Structure of the lymphatic glands," by Mr. John Goodsir, is of peculiar interest. His account of the mode of communication between the afferent and efferent lymphatics, in these curious bodies, does not differ much from that usually given. In the lymphatic glands of the human subject, he considers that the terminal branches of the afferent vessels form a network more or less dense with the radicles of the efferent; and he regards the cells, which not unfrequently present themselves in glands that have been injected with mercury, as resulting from the over-distension of short vessels. But in some of the lower mammals, it appears that there is a partial or entire obliteration of some of the meshes; so as to produce cavities more or less extended, with bars or threads passing from wall to wall, the lymphatics opening into them. Of the three tunics possessed by the extra-glandular lymphatics, the outer one is lost as soon as they enter the gland; passing over its surface, so as to form a capsule; and investing the lymphatics again, at their departure from it. The middle or fibrous tunic disappears less suddenly; being sufficiently apparent on the lymphatics near the surface of the gland; but being met with sparingly towards the centre. It is in the account given by Mr. Goodsir of the internal tunic and epithelium of the intra-glandular lymphatic network, that the novelty of his observations consists.

"In the short dilated anastomosing branches, which form the intra-glandular network, this tunic has become so thin and opaque, that the vessels will no longer transmit the light, and appear as if they were stuffed full of a granular matter. When these thickened and dilated vessels are cut, torn, or broken, so as to display

their structure, it may be observed that two parts enter into their composition; an extremely fine external membrane, and a thick granular substance which lines the membrane.—The external membrane is extremely thin and transparent. In its substance there are arranged, at regular distances, ovoidal bodies, so placed that their long diameters are all in the same direction. The distance of these bodies from one another is somewhat greater than their long diameters. They are imbedded in the substance and form part of the membrane. They are hollow, and contain one or more rounded vesicles grouped together in their interior. I have seen portions of this membrane after it has been acted on by acetic acid, present an appearance of being broken up into flat semi-transparent scales, united by their edges, each scale consisting of one of the nucleated ovoidal bodies, and a portion of the surrounding membrane.

“The thick granular substance, which is attached to the internal surface of the membrane just described, is composed entirely of nucleated particles, closely packed together, and cohering to one another. The thickness of this layer of granular substance is so considerable, as to render the vessel of which it is a part almost opaque, encroaching on its cavity, and leaving a comparatively narrow canal for the passage of the lymph and chyle. This canal appears to be somewhat irregular, in consequence of the greater exuberance of the granular substance in some spots, and its deficiency in others. This circumstance also accounts for the greater transparency of the vessels at certain parts of their extent. The canal is not lined by a membrane, but appears to me to be irregularly pierced through the granular substance: the projections and hollows of which, as well as the superficial layer of its nucleated particles, are freely bathed by the lymph and the chyle.—The nucleated particles are on an average about the 5000th of an inch in diameter. They are spherical, and contain a nucleus, which consists of one or more particles. Their walls are very distinct, especially after being treated with acetic acid, which reduces their size somewhat, without dissolving or breaking them up.—The layer of particles which has now been described is thickest in lymphatics towards the centre of the gland. If it be examined in either direction towards the afferent or efferent branches, it will be found to become thinner, and, at last, to be continuous with the layer of flat epithelium-scales of the extra-glandular lymphatics.” (p. 47.)

We can scarcely doubt that Mr. Goodair is correct in regarding the spots in the primary membrane in the light of “germinal spots,” developing the layers of cells that lie upon it. The large number of such cells that may be found in the fluid squeezed from the lymphatic glands when cut across, far exceeding, in their proportion to the fluid, those of either the afferent or efferent lymphatics, as was pointed out some time since by Mr. Gulliver,—seems to indicate that a continual production of them must be taking place in those situations; whilst the continuity of the mass which they form in the interior of the gland, with the epithelium-layer of the external lymphatic trunks, shows that their character must be essentially the same. Hence we may regard the lymphatic glands as possessing the *operative* portion of the lymphatic vessels,—namely, the basement membrane and the epithelial layer,—in a very concentrated form; and this is precisely the view to which we should be led, by the consideration of the facts of comparative anatomy on the larger scale. For the lymphatic system, first introduced in the class of fishes, attains its greatest development as to *length* in reptiles; but it possesses very few glands. In birds and mammals, the apparent development of the lymphatic system is not so great; but its real development is far greater; since what is wanting in length is more than made up for in concentration. It is well known that a considerable

change takes place in the nature of the absorbed fluid, during its passage along the lacteal and lymphatic trunks; and it can now, we think, be hardly doubted, that the cells lining the lymphatic vessels, but especially those so abundantly present in the glands, are the real agents in producing this change. That the term "glands" applied to these bodies, is consequently not so incorrect as might be thought from their structure, appears from the preceding considerations, and also from the following remarks of Mr. Goodsir, in regard to the arrangement of their vessels.

"The description usually given of the arrangement of the blood-vessels in the lymphatic glands, is sufficiently correct. The ultimate capillaries, as I have observed, do not ramify in the substance of the germinal membrane of the intra-glandular lymphatics; but are merely in contact with its external surface. In this respect they resemble the ultimate ducts of the true secreting glands.—The capillary network which surrounds the intra-glandular lymphatics, is as fine as that which supplies the ultimate secreting ducts; and has the same purpose in both,—to afford matter for the continued formation of secreting epithelium on the internal surface of the germinal membrane." (p. 48.)

There is this difference, however, which Mr. Goodsir seems to have overlooked;—that the blood distributed to ordinary glands has to furnish, not only the materials for the production of the epithelial or secreting cells, but also the materials of the secreted product;—whilst in the case of the lymphatic ganglia, the function of the vessels is only to supply the former kind of materials, the latter being furnished by the afferent lymphatics.

The next essay, on the "Structure of the human Placenta," is the most elaborate and complete of the whole series; and it appears to us to leave but little to be made out by future investigations in regard to the minute conformation of this important organ, and the connexion of the mother and foetus. The chief additions to our knowledge that may be expected in regard to it, will probably be derived more from the investigation of its comparative structure in other mammals, than from the continued prosecution of minute inquiries as to its own. In order to place our readers on a level with the subject, at the point at which it was taken up by Mr. Goodsir, we shall briefly state the facts which had been ascertained by Professors Weber and Reid, in regard to the character of the human placenta, and the relation of its foetal and maternal portions. The *foetal* portion consists of an immense number of villi or minute vascillary tufts, which contain the capillaries that form the terminations of the umbilical artery, and the radicles of the umbilical vein. These tufts hang down, as it were, in the cavity of the placenta; which belongs to the maternal portion of the organ, and which may be regarded as a vast sinus, receiving its blood from the curling arteries of the uterus, and returning it to the large veins of that viscus. The foetal tufts do not hang freely in this cavity, however; but they are bound in their places by reflexions of its lining membrane, which closely enwrap them, and form a series of partitions, crossing the placental cavity in every direction, and dividing it into a series of cells that communicate freely with each other. The mode in which the villi are thus kept *without* the cavity or placental sinus, whilst occupying so large a part of its contained space, is precisely that in which the abdominal viscera occupy the abdominal cavity, whilst still external to the peritoneal sac, and bound down by the reflexions of that membrane. A



there is no more direct communication between the vascular systems of the mother and fetus than this, it is evident that the whole change which the blood of the latter undergoes through the agency of that of the former, must be effected through the medium of the villi, and the lining membrane of the placental sac which covers them. These villi, therefore, serve two purposes; having for their object both the absorption of fresh nutriment, like the intestinal villi; and also the aeration of the foetal blood which passes through them, as in the gills of aquatic animals.

We now proceed to notice the inquiries of Mr. Goodsir into the minute structure of the parts whose general arrangement we have indicated; and we cannot do justice to them without making large quotations from his essay. The first relate to the structure of the tufts and villi of the placenta:

"A placental tuft resembles a tree. It consists of a trunk, of primary branches, and of secondary branches or terminal villi, which are attached as solitary villi to the sides of the primary branches, and to the extremities of the latter, in which case they frequently present a digitated arrangement. . . . . The digitated villi are only solitary villi grouped together at the extremity of a primary branch.

"The trunk, the primary branches, and the terminal villi of the tufts, are covered by a very fine transparent membrane, apparently devoid of any structure. This membrane may be described as bounding the whole tuft, passing from the trunk to the branches, and from these to the villi, the free extremities of which it closely covers. Its free surface is smooth and glistening; its attached surface is somewhat rough.

"Immediately under the membrane just described is a layer of cells. They are flattened spheroids, slightly quadrilateral in outline, from the manner in which they are packed together. When a tuft is viewed in profile, under compression, its edges exhibit the appearance of a double line, which leads the observer to suppose that its bounding membrane is double, with the cells just described situated between the two laminæ. In the space between the two lines, the nuclei of the cells may be seen in the form of dark oval spots, and the septa formed by the walls of contiguous cells are also visible. At variable distances, the space between the two lines widens out into a triangular form, the base towards the external membrane, the apex towards the centre of the villus. The wider space is produced by a larger group of cells, which appear to be passing off from a spot in the centre of the mass. The groups of cells I am now describing are germinal spots. They are the centres from which new cells are constantly passing off, to supply the loss of those which have disappeared in the performance of their important function." (p. 51.)

This *external* membrane of the foetal tufts, and the layer of cells generated from it, will be presently shown to be a part of the *maternal* structure; and to be in fact a continuation of the lining membrane of the uterus. We have now to notice the *internal* membrane, which is the boundary of the *foetal* portion; and another set of cells, belonging to the latter, and analogous to those of the intestinal villi.

"When a villus, under gentle compression, is viewed by transmitted light, there is perceived under the structures already described, and immediately bounding the blood-vessels and other parts to be afterwards examined, a membrane finer and more transparent than the external membrane, but strong and firm in its texture. This membrane is most distinctly seen when it passes from one loop or coil of the blood-vessel of the villus on to another. It separates very easily from the internal surface of the layer of external cells. I am not disposed to believe that it is attached to this layer, but am of opinion that the spaces which frequently

exist between them, even in villi which have undergone no violence, are due to the presence of a fluid matter, the nature of which will be afterwards considered. Be this as it may, pressure very easily separates this membrane from the external cells; the latter invariably remaining attached to the external membrane, the former continuing in every instance closely rolled round the internal structures of the villus, and following them in all their changes of position." (p. 52.)

Mr. Goodsir then gives an elaborate account of the distribution of the vessels in the villi; through which, however, we need not follow him, as the main facts had been previously ascertained by Professor Weber and Reid, and Mr. Dalrymple. The umbilical artery terminates in vessels, which enter the villi, proceed to their extremities, and return as the radicles of veins,—the same vessel, however, sometimes entering and returning from two or more villi, before it becomes continuous with a vein. "This species of blood-vessel, although it cannot be considered as either artery or vein, cannot nevertheless be denominated, in precise anatomical language, a capillary. It differs from artery and vein in retaining throughout the same mean diameter; and from the capillary, properly so called, in its greater caliber, containing four or six blood-discs abreast. It is also peculiar in exhibiting sudden constrictions and dilatations, like an intestine. These changes in form are most remarkable at the spots where the vessel makes sudden turns, coils, or convolutions."—We have now to notice an important discovery of Mr. Goodsir's; that of the *internal cells* of the villus, which are precisely analogous to those of the intestinal villi.

"Within the internal membrane, and on the external surface of the umbilical capillaries, are cells which I have named the internal cells of the tuft. When the vessels are engorged, these cells are seen with difficulty. When the vessels are moderately distended, and the internal membrane separated from the external cells by moderate pressure, the cells now under consideration come into view. They are best seen in the spaces left between the internal membrane and the retiring angles formed by the coils or loops of the vessels, and in the vacant spaces formed by these loops. These cells are egg-shaped, highly transparent, and are defined by the instrument with difficulty; but their nuclei are easily perceived. They appear to be filled with a highly transparent refractive matter. This system of cells fills the whole space which intervenes between the internal membrane of the villus and the vessels; and gives to this part of the organ a mottled appearance." (p. 54.)

We shall anticipate the subsequent part of the paper, by here stating his conclusions in regard to the nature and offices of these several structures; in which we fully accord with him:

"1. The placenta, as has long been admitted, consists of a foetal and of a maternal portion intermixed. But the maternal portion, instead of consisting of a part of the vascular system of the mother only, includes the whole of the external cells of the villi.

"2. The external membrane of the placental villi is a portion of the wall of the vascular system of the mother, continuous with the rest of that wall, through the medium of the placental threads, and lining membrane of the placental cavity.

"3. The system of the external cells of the placental villi belongs to the decidua, and is continuous with the parietal division through the medium of the cavities of the placental threads. This portion of the decidua has been named the central division of the placental decidua, and the threads decidual bars.

"4. The function of the external cells of the placental villi, is to separate from the blood of the mother the matter destined for the blood of the foetus. They are,

therefore, secreting cells, and are the remains of the secreting mucous membrane of the uterus.

"5. Immediately within the external cells of the placental villi, there is a membrane which I have named the internal membrane of the villi. This membrane belongs to the system of the fœtus, and is the external or bounding membrane of the villi of the chorion.

"6. Inclosed within the internal membrane of the placental villi, is a system of cells, which belong to the system of the fœtus, and are the cells of the villi of the chorion. These are the internal cells of the placental villus.

"7. The function of the internal cells of the placental villi is to absorb through the internal membrane the matter secreted by the agency of the external cells of the villi.

"8. The external cells of the placental villi perform, during intra-uterine existence, a function for which is substituted in extra-uterine life, the digestive action of the gastro-intestinal mucous membrane.

"9. The internal cells of the placental villi perform during intra-uterine existence a function, for which is substituted in extra-uterine life, the action of the absorbing chyle-cells of the intestinal villi.

"10. The placenta, therefore, not only performs, as has been always admitted, the function of a lung, but also the function of an intestinal tube." (p. 63.)

From Mr. Goodsir's full description of the villi of the chorion, previously to their becoming vascular, we abridge the following account. The substance of the tufts consists of nucleated cells of various sizes, the smaller being situated in the interior of the larger and in the intermediate spaces. Their surface is bounded by a fine but very distinct membrane, which, when minutely examined, is seen to consist of flattened cells united by their edges. The free extremity of each villus of the tuft is bulbous. The cells which constitute this swelling are arranged round a central spot,—the germinal spot of the villus; from which new cells are continually arising, that produce, by their development the elongation of the villus. A similar enlargement may be occasionally seen on the sides of the stems; and each of these spots is the commencement of a new villus or stem, which, as it elongates, carries forward on its extremities the swelling from which it arose. Blood-vessels first appear in the villi, when the allantois reaches and applies itself to a certain portion of the internal surface of the chorion. The umbilical vessels then communicate with the substance of the villi, and become continuous with loops in their interior. Those villi in which the blood-vessels do not undergo any further development, as the ovum increases in size, become more widely separated, and lose their purpose in the economy. The villi, again, in which vessels form, in connexion with the umbilical vessels, increase in number; as their vessels enlarge, the cells diminish, but they are always found surrounding the terminal loop of vessels in the situation of the germinal spot; and the bounding membrane of the villus coalesces with the contained cells along the stems and branches of the villi, so as to form a fibrous texture, whilst it remains distinct at their extremities. Thus is accomplished the metamorphosis of the villus of the chorion into the placental tuft.

We come, lastly, to Mr. Goodsir's investigation of the structure and formation of the maternal portion of the placenta; a chief element of which relates to that *quæstio vexata* of embryology, the formation of the decidua. By the observations of Professors Weber and Sharpey it had been ascertained, that when impregnation has taken place, the mucous

membrane of the uterus swells and becomes lax, its follicles increase in size and secrete a granular matter, and its capillaries enlarge in a proportionate degree. Mr. Goodsir has remarked, however, that the inter-follicular spaces, in which the network of capillaries lies, are occupied by a texture consisting entirely of nucleated particles; "this is a tissue represented by Baer and Wagner, described by them as surrounding what they supposed to be uterine papillæ (really the enlarged follicles), and considered by them as decidua." The increased thickness of the mucous membrane appears as much due to the development of this inter-follicular substance, as to the enlargement of the follicles.

"About the time at which the ovum reaches the uterus, the developed mucous membrane or decidua begins to secrete; the os uteri becomes plugged up by this secretion, where it assumes the form of elongated epithelial cells; the cavity of the uterus becomes filled with a fluid secretion, the 'hydropertione' of Breschet; and in the immediate neighbourhood of the ovum, the secretion consists of cells of a spherical form. The cells which are separated in the neighbourhood of the ovum, I consider as a secretion of the third order. They have passed off from the uterine glands entire, and possess a power peculiar to the third order of secretions, the power of undergoing further development after being detached from the germinal spots or membrane of the secreting organ.

"From what has now been stated, it appears that the decidua consists of two distinct elements; the mucous membrane of the uterus thickened by a peculiar development, and a non-vascular cellular substance, the product of the uterine follicles. The former constitutes at a later period the greater part of the decidua vera; the latter, the decidua reflexa. This view of the constitution of the decidua clears up the doubts which were entertained regarding the arrangement of these membranes at the os uteri and entrances of the Fallopian tubes. It is evident that these orifices will be open or closed, just as the cellular secretion is more or less plentiful, or in a state of more or less vigorous development. It also removes the difficulty of explaining how the decidua covers the ovum; a difficulty which cannot be reconciled with the views of Dr. Sharpey, who is obliged to suppose the deposition of lymph, which is only the old view of the constitution of the decidua.

"When the ovum enters the cavity of the uterus, the cellular decidua surrounds it, and becomes what has been named the decidua reflexa, by a continuation of the same action by which it had been increasing in quantity before the arrival of the ovum. The cellular decidua grows around the ovum by the formation of new cells, the product of those in whose vicinity the ovum happens to be situated." (p. 59.)

At this stage of its growth, the ovum with its external membrane, the chorion, which is covered by the tufts whose structure and functions have been just described, is imbedded in a substance that consists entirely of active nucleated cells. The absorbing cells of the tufts are constantly taking up either the matter resulting from the solution of the cells of the cellular decidua, or the fluid contained in those cells;—in either case, from matter supplied by the vessels of the uterus, but selected and prepared by the cells of its lining membrane, now become the decidua. Fully coinciding thus far with Mr. Goodsir, we cannot agree with him that "the cellular decidua represents in the gestation of the mammal the albumen of the egg of the oviparous animal." For though they are both supplied by a certain portion of the oviduct, and are both brought into play after the nourishment supplied by the ovum is exhausted, yet there is this important difference in their respective situations,—that the cellular decidua is a

formation *external* to the chorion,—whilst the albumen of the bird's egg is deposited *within* that fibrous membrane, which lines the shell and forms its organic basis, and which must be regarded as the representative of the chorion of mammals. The true analogue of the albumen of the bird's egg, we take to be the fluid, which is found between the zona pellucida or vitelline membrane of mammals, and the chorion, soon after the formation of the latter. This, too, is secreted by the oviduct, and appears to serve a purpose in the temporary nutrition of the ovum. We regard Mr. Goodsir as more correct in the following analogy. "I have also been in the habit of considering the uterine cotyledons of the ruminant and other mammalia as a permanent decidua vera, and the milky secretion interposed between them and the fetal cotyledons as decidua reflexa in its primitive and simplest form." (p. 59.)

The following is Mr. Goodsir's account of the incipient formation of the placenta, out of the elements supplied by the vascular villi of the chorion on the one hand, and the decidua on the other :

"The vessels of the decidua enlarge, and assume the appearance of sinuses, encroaching on the space formerly occupied by the cellular decidua ; in the midst of which the villi of the chorion are imbedded. This increase in the caliber of the decidual capillaries goes on to such an extent, that finally the villi are completely bound up and covered by the membrane which constitutes the walls of the vessels, this membrane following the contour of all the villi, and even passing to a certain extent over the branches and stems of the tufts. Between this membrane, or wall of the enlarged decidual vessels, and the internal membrane of the villi, there still remains a layer of the cells of the decidua.

"From this period, up to the full time, all that portion of decidua in connexion with the group of enlarged capillaries, and vascular tufts of the chorion, and which may now be called a placenta, is divided into two portions. The first portion of the decidua in connexion with the placenta, or forming a part of it, is situated between that organ and the wall of the uterus. This is the only portion of the placental decidua, with which anatomists have been hitherto acquainted ; and I shall name it the parietal portion. It has a gelatinous appearance, and consists of rounded or oval cells. Two sets of vessels pass into it from the uterus. The first set includes vessels of large size, which pass through it for the purpose of supplying the placenta with maternal blood for the use of the fœtus. These may be named the maternal functional vessels of the placenta. The second set are capillary vessels, and pass into this portion of the decidua for the purpose of nourishing it. They are the nutritive vessels of the placenta." (p. 60.)

By the careful dissection of an unopened uterus at the full time, in the manner formerly adopted by Mr. Owen, Mr. Goodsir has satisfied himself that the veins of that organ form many anastomoses near its internal surface ; the spaces which they inclose presenting the appearance of narrow flat bands. When the venous membrane is traced in its passage from the uterus into the placenta, it passes suddenly to each side to line the great cavity of that organ ; the flat bands just mentioned become smaller ; and on entering the cavity itself, the bands are seen to assume the appearance of threads, which pass in great numbers from the edges of the venous openings, and from the walls of the cavity of the placenta, on to the extremities and sides of the villi and tufts of the placenta. The whole mass of tufts is connected together by similar threads, and is attached in like manner to that surface of the parietal decidua which is covered by the venous membrane. On minute examination, Mr. Goodsir found these

threads to be tubular; and the membrane which they formed was seen to be continuous in one direction with the lining membrane of the vascular system of the mother, and in the other with the external membrane of the tufts of the placenta. These threads, as well as their cavities, were somewhat funnel-shaped at each extremity; and the funnel-shaped portions of the cavities of the threads, as well as, in some instances, the whole length of the tube, were found to be full of cells, which were continuous in the one direction with the parietal decidua of the placenta, and in the other with the external cells of the placental villi. This account of the appearances actually observed in the dissection of a uterus and placenta, fully bears out in our estimation the statements we have previously quoted with regard to the relations of the different structures.

We have dwelt the longer on this valuable paper, because we consider the elucidation of the structure and formation of the placenta given by Mr. Goodsir, as alike valuable in itself and creditable to him; since it is evident that no previous observer, among the many who have devoted a large amount of time and attention to the subject, at all approaches him in the exactness and completeness of his analysis. The formation and offices of the decidua reflexa strike us as the portion of his researches which leaves most room for further investigation; and this we have no doubt that he will bestow upon the subject, as opportunity presents itself. We cannot forbear noticing, that the analysis of this complex organ—the placenta,—and the determination of the real nature and connexions of its different parts, has been effected entirely through the aid of the microscope; and that to the use of this instrument also we owe the settlement of the long-disputed question, in regard to the mode in which the elements of the maternal blood find their way into the foetal system.

Two papers by Mr. John Goodsir,—on the structure and economy of bone, and on the mode of reproduction after death of the shaft of a long bone,—conclude his portion of the work. The former of these commences with the following general remarks, which cannot in our apprehension be kept too strongly in view, by those who devote themselves to the study of general anatomy and physiology.

“A texture may be considered either by itself, or in connexion with the parts which usually accompany it. These subsidiary parts may be entirely removed, without interfering with the anatomical constitution of the texture. It is essentially non-vascular: neither vessels nor nerves entering into its intimate structure. It possesses in itself those powers by which it is nourished, produces its kind, and performs the actions for which it is destined; the subsidiary or superadded parts supplying it with materials which it appropriates by its own inherent powers, or connecting it in sympathetic and harmonious action with other parts of the organism to which it belongs.—In none of the textures are these characters more distinctly seen than in the osseous. A well-macerated bone is one of the most easily made, and at the same time one of the most curious, of anatomical preparations. It is a perfect example of a texture completely isolated; the vessels, nerves, membranes, and fat, are all separated; and nothing is left but the non-vascular osseous substance.” (p. 64.)

We shall not follow Mr. Goodsir through his account of the structure of bone, since it adds little to what was previously known. His attention is peculiarly directed to the inquiry into the offices of the periosteum; and he concludes, most justly as we think, that it is a structure far less

important in the nutrition of bone, than the membrane lining the Haversian canals and cancelli. The following observations we believe to be partly new; the cells alluded to have been described by Mr. Tomes as existing during the process of ossification; but he does not seem to have recognized them as permanent constituents of the bone.

"Between the blood-vessels and the walls of the Haversian canals, there is a layer of cellular substance; which is the product, its cells being the descendants of the corpuscles of the cartilage or matrix in which the bone was originally formed. It forms a blastema, originally produced round each cartilage-corpuscle by development into a linear series, perpendicular to the ossifying surface; each of the secondary cartilage-corpuscles remaining as centres, or sources of new centres, of nutrition of the future bone; their progeny forming the cellular mass, which becomes inclosed in the capsules of compact primary bone. When these capsules have opened into one another to form the Haversian canals,—a process similar to the mode of development of gland-ducts and capillaries,—the cellular mass surrounds the vessels in their course, and separates them from the walls of the canals.

"That this cellular layer plays an important part in the economy of bone, appears probable from the prominent position it holds in its development, and from the intimate connexion of the Haversian canals with all the morbid changes of bone. Its existence, great extent, and probable powers, cannot be overlooked in any question regarding the economy of bone in health and disease.

"The cellular mass, just described, fills the cancelli, or enlarged Haversian chambers, of fetal bones; and in this situation has not been overlooked by former observers. In adult bones, it is in the medullary cavity, cancelli, and to a certain extent in the larger Haversian canals, replaced by fat-cells.

"On the surface of young and vigorous bones I have observed numerous cells, flattened, elongated, and more or less turgid, belonging doubtless to the system of Haversian cells." (p. 67.)

In the second of the two papers, whose titles have been just quoted, Mr. Goodsir enters more formally upon the question, of which, as is well known, the affirmative is strongly maintained by Professor Syme; "whether the periosteum possesses the power of forming new osseous substance, independently of any assistance from the bone itself." Mr. Goodsir's views of the nature of nutritive action would lead him, on *a priori* grounds, to question the possibility of the formation of bone by any action of the *vessels* of the periosteum or of any other membrane; and to maintain, upon the principle of "like producing like," that new bone can only be formed in continuity with previously existing osseous tissue. He has, with these views, instituted a careful examination of the experiments and observations relied on by Mr. Syme in support of his position; and he has arrived at the following conclusions in regard to them, from which the nature and direction of his inquiries may be inferred:

"As, therefore, it has been found impossible to separate the periosteum in living animals, without detaching shreds of bone along with it; as in necrosis of the shafts of long bones, portions of the old osseous texture may be detected in the periosteal sheath opposite ulcerations of the dead shaft; and as consistent with what is at present held regarding the powers of capillary vessels and the origin of the textures, we are compelled to assent to the doctrine, that periosteum does not possess an independent power of forming osseous substance.

"The participation of the periosteum in the office of regeneration—an important principle in surgery—is not denied in this conclusion." (p. 73.)

We cannot regard this question as completely settled, until the structure

and origin of *adventitious* bony deposits in other tissues shall have been more fully elucidated, and shall have been compared with that of the supposed periosteal formation.

Two papers by Mr. Harry Goodsir occupy the remainder of the volume: the first being a short account of the mode of reproduction of lost parts in the crustacea; and the second, which is the longest in the collection, being devoted to the anatomy and development of the cystic entozoa. This last subject lies so very wide of the preceding, that we think it better not to touch upon it for the present; more especially as Mr. Goodsir's views differ so essentially from those of others who have recently attended to the subject, that we feel at present in considerable difficulty as to the real truth. But we shall briefly notice some of the points elucidated in the former paper, as being of general physiological interest.

It has long been known that all the species of crustacea have the power of regenerating parts of their limbs that have been accidentally lost; and that, in the species with which we are best acquainted, if one or more of the last phalanges of the leg be seriously injured, the animal, by an effort of its own, throws off the remaining parts of the limb, from a point near the basal extremity of the first phalanx. This it will also sometimes do, simply for the purpose of making its escape when held by its leg. After a time, a new limb sprouts from the cicatrix; and this gradually acquires the size and proportions of the old one. It appears that in the crab and lobster, and others of the higher decapods, this regeneration will *only* take place from the points just named; but according to Mr. Goodsir, among the lower crustacea the power of regeneration is more extended, as a limb broken off at any part of its phalanges will grow. The part of the first phalanx at which the separation takes place is much contracted for the length of half an inch or more, in the common edible crab; and it is described by Mr. H. Goodsir as being filled with a fibrous, gelatinous, glandular-looking mass,—the organ which supplies the germs for future limbs. When a thin transverse section of this organ is placed under the microscope, it presents, in the first place, a foramen for the transmission of the vessels and nerves; and its substance is divided into two parts by a thick annular fibrous-looking band, the substance within which is much more transparent than that on its exterior; the former consists of numerous small cells, all having nuclei or nucleoli within them, and suspended in a thickish transparent liquid; whilst the latter consists of a confused mass of large cells, filling up the whole space between the fibrous band and the membrane of the shell. This fibrous band belongs, according to Mr. H. Goodsir, to a very peculiar system of vessels, which are very generally distributed throughout the body of the animal, but the relations of which he has not yet been able to elucidate. The following is his account of the process of reproduction.

“Immediately on the limb being thrown off, a quantity of blood escapes, which is soon stopped by the retraction of the vessels. After this takes place, we see the small open foramen for the passage of the artery and nerve, which becomes closed almost immediately by means of a slight film which spreads over the whole of the exposed surface. When this surface is examined some hours after the loss, we find that the small cavity of the foramen is slightly filled up with a body resembling a nucleated cell. This cell is the germ of the future leg, and very shortly increases in size, so as gradually to push out the film alluded to above, which is now become



a thick strong cicatrix. During the time that this is going on, the whole of the exposed surface becomes tense and bulging; but this gradually decreases round the circumference as the central nucleus increases in size, which it does at first longitudinally, and then transversely. As it increases in size, the cicatrix, which still surrounds it as a sac, becomes thinner and thinner, until it bursts; when the limb, which has hitherto been bent upon itself, becomes stretched out, and has all the appearance of a perfect limb, except in size.

"As far as my observations have yet gone, it appears to me that the germinal cell is derived from one of those which are nearest the central opening on the said surface. This cell follows the ordinary course of development, by the nucleus breaking up into nucleoli, which in time become parent-cells, each of which again undergoes the same process. This proceeds for several stages, all the less important cells dissolving and serving as nourishment for the more important ones, until the number of centres is reduced to five, the number of joints required; which, by a constant process of a similar nature, assume the form of the future leg." (p. 78.)

We would close as we began, by thanking the Messrs. Goodair most earnestly in our own name, and in that of the profession, for their most valuable additions to our stock of knowledge. We wish that we could see the same activity and zeal displayed by some of those who hold the few situations in which a physiologist can make a living by the business of instruction. Upon such, it appears to us, the world has the chief claim for labours that may extend the domain of science; yet we too often see that those who attained the early distinction which procured them these posts, sink into inactivity as soon as they are attained.

We think it right to suggest to the Messrs. Goodair, in conclusion, that, when they next bring their discoveries under the public eye, they procure the assistance of some friend, less versed perhaps in microscopy, but more in the craft of authorship, to revise their essays before they go to press. Were we disposed to be critical upon errors of style and grammar, we could have pointed to not a few, which deserve grave reprehension. Many of these seriously obscure the authors' meaning; and we have consequently thought it necessary to correct them, in making our quotations. We say no more, in consideration of the sterling value of the production.

## ART. II.

*Technik der Medicinischen Diagnostik.* Von Dr. A. SIEBERT, &c. Erster Band.—Erlangen, 1844.

*The Art of Medical Diagnosis.* By Dr. A. SIEBERT, &c. Vol. I.—Erlangen, 1844. 8vo, pp. 408.

MEDICAL diagnosis is the art of discovering the nature of diseases and of distinguishing them from each other. The right practice of it requires, firstly, a knowledge of the human body in a healthy state, the position, size, and structure of its various organs, their functions, and their anatomical relations. The practitioner must also be acquainted with all known morbid conditions, and be capable of deducing from the data of pathological anatomy and physiology, all possible departures of the human organism or of its organs from the normal condition. These are Dr. A. Siebert's views.

As general principles, we readily admit their correctness. But there is another kind of diagnosis of humbler pretensions, but perhaps not less

useful than the scientific and recondite art discussed by the author of the volume before us, and we are quite sure, extensively practised. This is the method of empirical diagnosis. We term it empirical, because it is conversant mainly with experience. The science of medicine being confessedly imperfect, so also must be scientific diagnosis. We do not know the nature of many or most diseases; but we have learnt the lessons of experience, and therefore in practice it is, that our diagnosis is empirical. The practitioner in consultations quotes a "case" to his medical brother; or in daily practice quotes it to himself. The nature of the case he perhaps only guesses at; the remedies which he administered successfully he knows well. In consulting the written experience of his predecessors on any particular case, the treatment of which is rebellious, the diagnosis of the practitioner is also empirical. He is more anxious to find out an instance like his own, so that he may treat it empirically, than to seek for general principles or make logical deductions. This, by way of introduction, and as a hint to future writers on diagnosis.

Scientific diagnosis is made up of several subdivisions. First, is *anamnesis*; this comprises (in one short sentence) the medical biography of the patient. It ascertains his physiological relations, the external and internal causes of disease, their origin and mode of action, and the order of development of the morbid phenomena. Without this anamnestic inquiry, the true condition of the patient at the time of inquiry (the *status præsens*) can only be imperfectly ascertained. *Symptomatology* is another division of diagnostics. It considers all the changes in the structure and functions of organs from the healthy condition, and their relation to the disease; and it includes the art and mode of ascertaining these deviations, namely, the methods of exploration. *Semeiology* interprets and estimates the symptoms, endeavours to apply special nosology and pathological anatomy to their elucidation, and harmonizes them with the facts of general anatomy and physiology. Compounding or composite diagnosis arranges the facts thus worked out—the *signs* of diseases—into groups, according to physiological and pathological principles, and brings these groups into general relation, so as to develop a special form of disease, which it is the duty of comparative diagnosis to compare with the ideal representative of special nosology deduced from observation and experience. *Prognosis*, the last division mentioned by Dr. Siebert, pronounces as to the further course and termination of the series of morbid phenomena. The following extract will illustrate our previous statements:

"These divisions into which diagnosis resolves itself correspond to the following questions, the answers to which it is the physician's business to ascertain.

"1. What led to the disease? why, through what agencies, and in what manner did the sickness happen?

"2. What aberrations from the normal condition of the organs are to be observed?

"3. How are these aberrations to be explained, and what they themselves signify?

"4. How are they related to each other? what is their relative value, and how are they to be made a whole so as to constitute a specific disease?

"5. What are the grounds for deciding that it is *this* disease and no other?

"6. What will be its course and termination?" (p. 56.)

Dr. Siebert takes up the different divisions of his subject in succession,

under the head of *general diagnosis* and *clinical propædæutics*. About two hundred pages are, however, devoted to the means and method by which the patient should be examined.

It is manifest, that skill in diagnosis is very much dependent upon the personal qualifications of the physician. Can he be a good auscultator without, what the musicians term, an ear? or can he have delicacy of touch without the power to perceive minute shades of difference in the form and resistance of structures? or can he perceive instructive analogies quickly if he have not a good memory, and that invaluable mental power by which observations are tabulated in the mind as quickly as they are perceived? moral qualifications are also necessary. The physician who would be a good diagnostist must not be indolent or careless; must avoid the extremes of too great kindness or severity; must be neither too grave nor too gay. Tact should also be observed in examining a patient. The physician should take care to have him in a good light. His temper, habits of life, manner of speaking, the state of the room in which he reposes, in fact, everything should be scrutinized in a quiet, placid manner, removed alike from taciturn severity, and garrulous abruptness. Twenty-five rules of conduct are laid down by Dr. Siebert for the practitioner, the propriety of which cannot be questioned. It is probable, however, that one good example would avail more in teaching than a folio volume of rules. It is marvellous how little the *lex scripta* of medicine is heeded.

*The methodical examination of a patient.* Three methods are discussed: firstly, the synthetical, genetical or historical; secondly, the analytical; and thirdly, a method composed of the two. The first begins the inquiry with the birth of the patient; makes reference to the health of his ancestors or relatives, and traces hereditary diseases; passes in review the diseases of infancy; inquires into his rank and occupation, his bodily constitution, usual morbid states, mode of living, habits, inclinations, and idiosyncrasies. This step being taken, the physician next ascertains the causes of the existing affection, the mode of its commencement, its course, and the operation of the remedies already used. The *anamnesis* being completed, the examination of the *status præsens* is proceeded with. In this, the inquiry as to the state of the organs and of their functions, is carried on in a systematic and regular manner.

The synthetical method is directly opposed to the analytical. It commences with the *status præsens* of the patient, and endeavours to ascertain the principal derangement of structure and function, and its relations. From hence it conducts the *anamnesis* by retrospective process.

The third method, compounded of the preceding, is the most useful and most generally applicable, for while it secures the advantages, it avoids the disadvantages of the others. It collects the retrospective facts only which bear on the case, and affords the patient an opportunity of making his statements in a historical sequence. The synthetical method is the most scientific and thorough. Dr. Siebert transcribes the questions and answers in a case of "enterohelcosis" (ulceration of the intestines) with perforation, examined by him after this method; it is an interesting example of clinical research, extremely instructive, and creditable, we think, to its author.

*On the discovery of the objective phenomena of disease, and on the*

*methods of exploration in general.* Those phenomena are objective which the physician observes himself; those subjective which he can learn from the patient only. In ascertaining the former, several points are worthy of notice. First, the regions of the body require to be defined, and the relative position of the corresponding organs. Dr. Siebert discusses the regions defined by Raciborski, Velpeau, Borck, and Williams, and gives a lithographic sketch of those which he himself adopts, naming them after Raciborski's method. These are illustrated by two plates; but as the slight alterations introduced by the author add little or nothing to our previous knowledge of the subject, we avoid entering into details.

*The art of measuring.* Under this head, Dr. Siebert gives instructions for the admeasurement of the skull in its various diameters, of the thorax in every way, and of the abdomen. Dr. Siebert objects to the plan of Montault which unites the measuring tape with the stethoscope, as impairing the utility of the latter. Among the instruments referred to, or described, is Canstatt's pneumometer. This consists in a slip of parchment, an inch in breadth and 110 to 120 centimetres (36 to 40 inches) in length, furnished at one end with a fastener like that on pocket-books. To measure the dilating force of the thorax, the measure is put round the chest, the end slipped through the slider or bar, and then it is drawn as tight as possible. The patient now breathes deeply a few times, and the difference before and after inspiration expresses in centimeters the degree of dilatation of the thorax during inspiration.

*The art of percussion.* Dr. Siebert thinks the wooden or caoutchouc pleximeters have no superiority over the old ones made of ivory, or over the finger. Special directions are given as to the art of percussion so as to elicit correct sounds, an art by no means generally understood. Dr. Siebert knows physicians, who year after year, percuss with the wrist immoveable, with their nails, and fingers improperly applied, &c., and who rarely, if ever, elicit correct sounds. Eight fundamental sounds, each having three variations, are described by our author, and those of Piorry and Roda, Briçon, Williams, and Raciborski, are discussed.

*The art of auscultation.* Of this there are three kinds, the mediate, immediate or direct, and the *auscultatio ad distans*. The whole chapter forms a complete monograph on the structure and use of the stethoscope.

*The application of chemistry, and of the microscope, to diagnosis.* These two chapters are devoted to a description of the chemical and microscopical apparatus necessary to chemical research, and contain minute rules for their proper use. The late Dr. I. F. Simon contributes the materials of the chemical chapter.

*On the external exploration of the patient and the results.* The first point to be ascertained is the state of nutrition generally. Corpulent individuals, for example, are more subject to inflammatory affections, epidemical diseases, and sudden death, than those who are lean. Emaciation is more frequently a consequence of disease than obesity. The latter is, however, observed in polyærcia and chlorosis gigantea. Sudden emaciation is a *malum signum* in acute diseases, indicating a deep-seated lesion of important organs. When it accompanies diarrhoea from probable intestinal ulceration, or chronic vomiting, or the symptoms of acute hydrocephalus, the prognosis is gloomy. On the other hand, rapid wasting in typhus or

scarlet fever, or in the "morbus maculosus," it is by no means a fatal sign. We have learnt by repeated experience that the patient may be so prostrated as to present an appearance not much unlike the facies hippocratica, and recover speedily. The emaciation of special parts of the body is observed in some diseases. In disease of the liver or spleen, the face and extremities first waste, in tubercular phthisis, the upper extremities and clavicular regions.

*The form and size of special organs* is another point to be ascertained from an external examination of the patient. Thus, the skull may become generally enlarged, or certain points developed, the outlines altered from the normal condition, &c. So also changes dependent upon constitutional predisposition or actual disease may be observed in both the hard and soft parts of the neck, thorax, abdomen, and limbs.

*The temperature* is another point to be carefully attended to; under this head Dr. Siebert gives a general outline, of the physiology and pathology of animal heat so far as they bear on diagnosis.

*The state of the cutaneous exhalation* presents numerous points of value in diagnosis. It is dependent on the condition of the cutaneous structures themselves, or of the state of the surrounding medium, on the activity of the internal secretions, on the rapidity of the circulation, and the condition of the blood. The average quantity of fluid transpiration is estimated at 29 ounces daily, containing from 7 to 8 scruples of solid matter. Children perspire more profusely than adults, men more than women. Men with fine hair and fair complexion readily perspire; and they have a predisposition to rheumatism and gout. Local sweats have considerable pathological importance. Perspiration with burning heat on the cheeks and nose is a sign of pharyngeal or gastric irritation; on the chest of structural change in the lungs. Local sweats are sometimes critical, as of the feet, when the excretion has an odious stench. We have seen a case of this kind, in which the sweat stood in drops on the feet, fresh drops springing up as fast as the feet were wiped. And it was curious that the surface affected occupied the posterior half only of each sole.

The connexion of the cutaneous exhalation with internal organs is important. The mutual dependence of the skin and kidneys is very obvious, not so also that between the lungs and the skin. Dr. Siebert observes that they suffer when the cutaneous transpiration is both diminished and increased. In the former case, the amount of pulmonary transpiration is morbidly increased; in the latter it is diminished, while the function of the lungs is exalted to meet the waste of oxygen through the skin. Profuse perspirations artificially excited, as in the "water cure" are extremely injurious to these organs. When there is a predisposition to pulmonary hemorrhage or tuberculous deposit, they are readily developed by this method of treatment as by every other cause of increased thoracic action. An extensive burn proves fatal in the same way. The functions of the skin being arrested, those of the lungs are morbidly exalted. In phthisis (Dr. Siebert argues) the colliquative sweats and diarrhoea are in like manner dependent upon the arrest of function in the lungs.

Dr. Siebert notices the various pathological phenomena implicating the cutaneous secretion at length. A whole section is devoted to the electric tension of the skin. The results of experiments on this point are however

contradictory. Pfaff and Ahrens found in general that the skin was positively electrical in health; that men of a sanguineous, gave out more free electricity than those of a phlegmatic temperament; that there is more in the evening than in other hours of the day; that spirituous drinks increase the quantity; that women are more frequently negatively electric than men, and in the negative condition more particularly during pregnancy and menstruation; that a cold surface gives out no electricity; and lastly, that during the progress of rheumatic affections the amount falls to zero, from which it gradually rises as the disorder departs. Buzzorini found that cholera patients gave out electricity during the crisis of the disease. In scarlet fever and analogous affections, the gold leaves of the electrometer diverge much more actively than in health, and if lycopodium seeds be strewn on the skin, and then blown off they form into tolerably regular figures. Experimenters on pathological electricity are, however, far from being agreed, although the better authorities are in favour of the facts stated. The electric condition of a patient has an important relation to that of the earth and atmosphere. Dr. Siebert discusses the etiological influence of exoteric electricity; a subject important in itself, but having no direct connexion with diagnosis.

*The colour of the skin* presents many pathological varieties of importance in diagnosis. Under this as well as the previous heads, no reference is made to the diagnostic value of symmetrical or asymmetrical phenomena. This is an omission Dr. Siebert will do well to fill up. Dr. Laycock, Dr. Budd, and Mr. Paget are the most recent writers on this subject.

The position and movements of the body and limbs, and the constitutional peculiarities and physiognomy of the patient are of importance in all their details to a correct diagnosis. It is from these indeed that the physician possessed of quick perception and tact derives his most valuable information. Dr. Siebert distinguishes six groups of physiognomical rugæ. The *R. transversæ*, situate in the forehead, formed by the frontal muscle, express excessive pain arising externally. The *R. oculo-frontales*, extending from the forehead vertically to the root of the nose, express distress, anxiety, anguish, and severe internal pain. They also indicate in acute diseases an imperfect or false crisis, an impending efflorescence, and often a fatal termination. In severe headache, both the classes of rugæ just mentioned are observed. When the former join the latter abruptly in a disease, paralysis is impending or commencing. The *linea oculo-zygomatica* (of Jadelot) extending from the inner angle of the eye somewhat below the cheek-bone indicates in children a cerebral or nervous affection; in adults, disorder or abuse of the generative organs. The *linea nasalis* of Jadelot and De Salle (the Rhinal-linea orbicularis of K. H. Baumgärtner) begins at the upper border of the ala nasi, and extends more or less curved to the outer margin of the orbicularis oris. It is strongly marked in phthisis and atrophy. The inferior portion (*linea buccalis*) indicates gastric disease; the upper portion (the proper *linea nasalis*,) marks an affection of the upper part of the intestinal canal. Occurring conjointly with retraction of the cheek and with the *L. oculo-zygomatica*, the eyes being fixed and the complexion wan, it is a certain indication, according to Pieper, of worms. The *L. labialis* extends from the angle of the mouth, and is lost in the lower part of the face. In children it generally

marks a thoracic affection, which renders the respiration laborious or painful. The *L. collateralis nasi* passes downwards in a semi-circular direction towards the chin, and externally to the *Linea nasalis, buccalis, and labialis*. It generally indicates chronic and obstinate disease of the thoracic or abdominal viscera. Dr. Siebert gives a similar account of the symptoms indicated by the mouth and eye. It is manifest that no verbal description can convey a true idea of their value. We have often wondered why in this age of pictorial literature no one has given a series of lithographic drawings, exhibiting the external and visible symptoms of disease.

Several morbid constitutions are considered by our author. The cerebral, apoplectic, medullary (spinal), plethoric, pulmonary, phthisical, abdominal, hepatic, splenic, arthritic, onanistic, and the tippling under the varieties of the wine, spirit, and beer tippling, are all noted in detail. Some of these are, we think, ill defined, others badly described. The arthritic constitution, the proper diagnosis of which is of very great practical importance, is dismissed in six or eight lines; without in fact indicating its true characteristics, which are those subsequently noted as proper to the arterial constitution. The hemorrhoidal habit, not generally recognized by British practitioners, and corresponding to Dr. Siebert's venous constitution, is characterized by the predominance of the organs in connexion with the portal system. The parts of the body below the diaphragm are sensibly more developed than in the normal condition. In the more exquisite forms, the pelvis and lower extremities are proportionately larger than the thorax and upper extremities. The skeleton of hemorrhoidal men approaches in form to that of the female. The veins are also more developed than the arteries. In the cheeks, nose, and the conjunctiva (the recognized varicose hemorrhoidal eyes) there are isolated and star-like groups of injected blood-vessels.

The physiognomy and constitution induced by specific forms of disease are next noticed. That significant of cardiac disease comes first: and Dr. Siebert makes the remark—very important if true—that softening of the heart is frequently the cause of mental derangement, which is mistaken for hypochondria.

The scrofulous constitution is considered under two forms, the irritable and the torpid. The first is seen in children with delicately formed extremities, delicate velvety skin, brown complexion, and dark hair. The eyes are dark and brilliant, the lashes long, the lineaments of the face finely drawn and expressive, the mind precocious. The torpid is connected with a fair complexion, thick and swollen nose, chin broad, the teeth irregular, late developed, and early becoming yellow and carious. Inflammation of the meibomian glands, scrofulous ophthalmia, intolerance of light, eruptions on the head, nose, lips, enlarged cervical glands, &c., accompany this well-known scrofulous diathesis. We subjoin Dr. Siebert's description of the scabious or itch-constitution, as one not generally recognized in England.

"The itch-constitution is frequently observed many years after the itch has been extirpated from the skin, without the itch-disease being cured; more seldom, however, when the itch passes by metastasis into some distinct form of internal disease than when breaking out from time to time on the skin, it returns again to the latent state, and exhibits its peculiar phenomena in an erratic manner. I have remarked the itch-constitution in many individuals, and known and treated

it as such before its existence was shown by examination and inquiry, more particularly in journeymen mechanics infected in their travels, and with whom the itch had lingered for years. It was manifest by the puffed-up, swollen, plump face; the smutty eyes; the dull silly stare; the swollen nose and lips, the latter of a sallow hue; the puffy eyelids; and the general dull tint of the skin, when none of the usual complaints of vertigo, debility, indigestion, shortness of breath, lassitude, and sleepiness, had given indication of the disease. Many subsequently showed the truth of the early diagnosis by an itch-eruption more or less copious. Some became phthisical, others epileptic. In one case, the fits of vertigo increased in intensity, until the patient was insensible in them: these terminated by a discharge of a limpid fluid from the nostrils. In another case, death followed a remarkably acute attack of hydrothorax." (p. 198.)

We are not quite sure that British practitioners are right in slighting the doctrine generally received in Germany as to the constitutional origin of the itch. Cases, apparently of this kind, occasionally occur in families of obstinate cutaneous diseases highly contagious (*scabies cachectica*), characterized by the larger pustules and vesicles of scabies, on the hands and feet, and by minute pustules on the neck, shoulders, axillæ, and extremities, ending in leprous-like patches varying in size from a fourpenny-piece to half-a-crown. Sometimes patches of psoriasis are intermingled. The cure is difficult on account of the repeated relapses to which the individuals are subject. After the eruption has apparently disappeared, fresh pustules appear on the shoulders, scattered here and there, then extend to the axillæ, then over the deltoid muscle, &c., and terminate in the round leprous patches described.

Dr. Siebert refers to that rapidly fatal form of "gastrobrosis," the circumscribed perforation of the stomach, almost peculiar to young women, and describes its physiognomical characters, but he gives us no means of anticipating its probable occurrence, nor does he even allude to the fact, well known in England, that it principally attacks the sex.

*Anamnesis.* Under this head Dr. Siebert considers the art of diagnosis as connected with the age, sex, race, and nation, family predisposition and hereditary peculiarities, education, domestic and civic life, trade and occupation, diet, dwelling, epidemic influence, temperaments, previous diseases, &c. We can only notice—

*Hereditary predisposition.* There is no subject connected with medicine which would more amply repay a scientific investigation than this. The facts are numerous, and can be arranged on an irrefragable general principle, namely, that every portion of the body of the offspring participates more or less in the physiological conditions of the parents. The first step in the inquiry would be, to ascertain the physiological laws of hereditary transmission. The true direction in which to seek this, is in embryology, and particularly in the development of tissues. Dr. Siebert remarks, to illustrate our views, that the gout of the parents may appear in the offspring as stone, or disease of the heart. This we know to be true, and the explanation, we conceive, is, that the serous layer of the embryo has received the hereditary predisposition of the parent. This predisposition is shown in a tendency to disease of the embryonic products of the serous layer, namely, the proper serous membranes and the bones and muscles with their appendages, namely, sero-synovial sacs, tendons, cartilages, &c. With this predisposition a morbid action in and a metamorphosis of the



serous tissues is most frequent. Thus, in persons of this constitution, the muscular and tendinous fibres, and the cartilages, will change into bone—the serous membranes into cartilage—while the sub-serous membranes of the hollow muscles become the nidus of ossific deposits. Dr. Siebert remarks that gonorrheal fathers have scrofulous rachitic children. In this example, the mucous layer of the embryo and the mucous surfaces and tissues derived therefrom have the morbid predisposition of which the gonorrhea and the scrofula are special manifestations.

Special organs suffer also hereditarily, just as minute personal traits are transmitted to offspring. M. Boucher inquired into the fate of 58 individuals, the offspring of 14 epileptic females. Of these 32 died of convulsions in infancy, and of the 26 remaining, 7 had different nervous affections, 2 convulsions of an intermitting type, 2 were epileptics, and 1 hysterical; so that 14 only of 26 who grew up, remained free from disease of the nervous system. As we shall revert to this important question elsewhere, nothing more need here be said, except that Dr. Siebert's discussion of the subject is superficial and contains nothing novel.

We pass over the subjects already indicated without comment, to note Dr. Siebert's views of the epidemic constitution of the year; a subject truly important to be known in the diagnosis and treatment of disease. Dr. Siebert justly ridicules the partial views of those pathologists who see an inflammatory, a rheumatic, a catarrhal, gastric, nervous, &c. genius according to their preconceived notions; he is only surprised that they have not discovered a sanguineous, or osseous, or serous constitution. The fact most generally recognized, is that the predominant constitution or genius attracts all other diseases to itself, and impresses upon them its own type. But what is the cause of the predominant constitution? Dr. Siebert, in common with the majority of enlightened practitioners, looks for it in the meteorological changes proper to climates and seasons. Different climates have each their permanent "constitutions,"—so have the seasons. A cold, dry winter is as assuredly marked by inflammatory affections of the lungs, as by depression of the thermometer. Dr. Siebert enumerates several analogous instances of the seasonal recurrence of disease. The truth we think is this, that the meteorological changes determine a predominance or cessation of action in special organs, and it is these functional changes that determine the epidemic constitution just as they determine the individual constitution. Only in the latter case the functional activity or repose is permanent or alters only with age; in the former it alters with every great meteorological change.

*Composite and comparative diagnosis.* We pass over symptomatology and semeiology to notice this, the most important domain of diagnosis. A case of disease of the heart in a male, aged 26 years, is detailed at length, in illustration of Dr. Siebert's method. We wish we could transfer it to our pages for the benefit of those who cram the weekly journals with their crude, unmeaning, and useless histories. The facts of the case are systematically detailed under different heads: Firstly, the man's medical biography—the *anamnesis* is given—the commencement of the disease, then its course hitherto, with the patient's present condition, under the subdivisions of external appearances, symptoms implicating the circulation, respiration, digestion, and feelings of the patient. The whole phenomena

of the disease being ascertained, they are next studied, and their relative value estimated. The anatomical signs of hypertrophy are compared with the functional disturbance in the heart's action, and these with the other symptoms, the objective and subjective, the local and positive, the idiopathic and sympathetic, deuteropathic and tritopathic, &c.

The second step is the arrangement of the symptoms into a known form of disease. This may be done by the processes of "subsumption," and comparison and exclusion. In the former a chain of inferences less and less general are made from the phenomena until a special inference, and the special pathology of the disease is deduced. The process of "subsumption" inquires what the disease must be: the process of comparison and exclusion shows what it cannot be. The last step is the consideration of the individuality of the patient, the amount of health remaining to him, and the relation of the disease to the weather and the epidemic "genius." The portion of special diagnosis contained in this, the first volume, comprises the exploration of the heart. The mechanism of the heart's movements, and the nature and causes of its sounds are discussed at length. We must defer, however, the notice of this part to a future opportunity.

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#### ART. III.

*A Treatise on Poisons in relation to Medical Jurisprudence, Physiology, and the Practice of Physic.* By ROBERT CHRISTISON, M.D. F.R.S.E. &c. Fourth Edition.—*Edinburgh*, 1845. 8vo, pp. 986.

THIS work has evidently undergone many changes since its first appearance, but the most important change is in the enlargement of bulk and in the addition to the section on irritant poisons, especially on arsenic, of a large amount of valuable information.

On the physiological action of poisons there is but little to observe, this being a purely speculative branch of the subject. The opinions of the author appear to have become modified in respect to the action of certain poisons by sympathy. The experiments of Mr. Blake appear to have in some measure shaken the author's views respecting the action of prussic acid, by a supposed sympathetic effect on the nerves of the part with which it comes in contact. He denies, however, that Mr. Blake's experiments are sufficient to show that this substance always acts by absorption, and strongly insists upon the fact that the extreme rapidity of its operation, as observed by numerous experimentalists who had no particular theories to uphold, are adverse to this view. The poison has been observed to affect the system within a period of time, less than that which Mr. Blake has demonstrated to be necessary for the process of absorption and diffusion throughout the body. In short, the absorption of the poison cannot be denied, the occasional detection of the odour in the blood, and throughout all the cavities, is a clear proof that this process is in operation in cases of poisoning by prussic acid. But the difficulty to be overcome in solving the question, is this—the poison has been known to produce its effects in *three* seconds and even less. Again, in animals in the impregnated state while it has destroyed the life of the parent, it has not affected the young contained in the uterus. So with respect to conia, the active

principle of hemlock, "this is not less prompt in its operation,—when it was injected in the form of muriate into the femoral vein of a dog, I was unable with my watch in my hand to observe an appreciable interval between the moment it was injected, and that at which the animal died,—certainly the interval did not exceed three or at the most four seconds." (p. 8.)

It seems exceedingly difficult to account for this rapid operation of poisons on the supposition that before they can affect the system, they must make the round of the circulation, an assumption which the theory of their action by absorption substantially implies; and this difficulty is increased when we observe their rapid effects, in cases in which the poison has not been directly poured into the blood. Have the observers of such cases been mistaken in their observations, and exaggerated the rapidity of operation, or do the absorption and diffusion of the poison go on with even greater rapidity than Mr. Blake's own experiments would lead us to believe? Further observations are required to determine which of these, is the correct view. In the meantime Dr. Christison leaves the question unsettled:

"It is impossible therefore to concede, that Mr. Blake's inquiries, merely because they are at variance with prior results, apparently not less precise and exact than his own, put an end to the argument which has been drawn, in favour of the existence of a sympathetic action, from the extreme swiftness of the operation of some poisons. At the same time, on a dispassionate view of the whole investigation, it must be granted to be doubtful, whether this argument can be now appealed to in its present shape with the confidence which is desirable. And on the whole, the velocity of the circulation on the one hand, and the celerity of the action of certain poisons on the other, are both of them so very great, and the comparative observation of the time occupied by the two phenomena respectively, becomes in consequence so difficult and precarious, that it seems unsafe to found upon such an inquiry a confident deduction on either side of so important a physiological question as the existence or non-existence of an action of poisons by sympathy." (pp. 10-11.)

The experiments of Liebig published since the appearance of Dr. Christison's work, may be equally cited, both by sympathists and absorptionists, in support of their views. We here quote them, as they bear immediately upon the subject now under discussion. In his lectures Liebig says, "Comparatively large quantities of hydrocyanic acid in aqueous solution, may be taken into the digestive apparatus without producing any very perceptible noxious effects, while the same quantities of the acid inhaled as vapour cause immediate death. Thus a cat for instance can bear the administration of from two to three drops of anhydrous hydrocyanic acid diluted with from four to six ounces of water, without being in the least affected by it. If you place two drops of anhydrous hydrocyanic acid in the mouth of the same cat, taking care at the same time to prevent the animal from breathing by stopping its mouth and nostrils, there is no perceptible effect produced; but the animal dies the very instant that you permit it to breathe, and consequently as soon as the vapour of the acid gets into the lungs." (Lancet, Dec. 7, 1844.)

The dilution of a poison with water is commonly considered to favour its absorption by spreading it over a large surface, and thus bringing it in contact simultaneously with the numerous absorbent mouths of the in-

testinal canal. We presume that Liebig has performed the experiment to which he refers by the positive manner in which he states the results; but the case seems altogether inexplicable upon the view that prussic acid acts by absorption. It would be as well before drawing any inference from a single negative result, to try the effect of administering conia, strychnia, or aconitine in an equally diluted state. Liebig evidently looks upon hydrocyanic acid as operating by its vapour only; for even the anhydrous liquid in a proportion nearly equal to one hundred grains of pharmacopoeial acid, is according to his last-mentioned experiment, without any effect when placed on the tongue of a cat, provided the animal be prevented from drawing the vapour of the acid into its lungs. If this experiment be correctly reported, there is at once an end to the doctrine of operation by sympathy; for the very principle of this doctrine, is founded on the fact, that mere contact with the nervous tissue of a part, is sufficient for the production of the usual effects of the poison. The only inference which we can draw from Liebig's experiments is, that prussic acid can neither operate by absorption nor by sympathy,—it acts only by its vapour which may be so diluted with a few ounces of water as to be rendered inert. Then again, this vapour is limited in its operation: it appears as if it would only act through the lungs by becoming inspired with the air. If respiration be prevented, it is said that the anhydrous acid, so highly volatile be it remembered as to boil below a temperature of  $80^{\circ}$ , has no power of penetrating through the mucous lining of the mouth and tongue to the blood-vessels beyond,—for the cat escaped, if it did not breathe; while when the vapour passed into the lungs, it traversed the mucous membrane of the air-passages and the animal fell dead instantly. Upon this theory, if the anhydrous acid or any of its aqueous solutions were injected up the rectum, no perceptible effect “should be produced,” because none of the vapour could reach the lungs, but if we mistake not the life of a person has already been destroyed by the cyanide of potassium being accidentally used as an enema, and we have not the slightest doubt that any man or animal would speedily perish, if prussic acid were employed in this manner. It is highly probable that the vapour taken into the lungs may render the operation of the poison more speedy by bringing it at once in contact with a very large mucous surface. The reputation of Liebig has given such currency to his views on all subjects, even on physiology and pathology, that his statements are often received without sufficient examination. These experiments on prussic acid,—so defective in detail—so conflicting in results, and so contrary to all those facts connected with poisoning, which have been determined by careful observers, were actually quoted in a pamphlet referring to the late case of the Queen v. Tawell, as going to prove that two grains of anhydrous acid, were not sufficient to destroy a human being.\* Liebig may not have foreseen that such an improper inference would have been drawn; but this nevertheless only proves the danger of a man, eminent in one department of science, venturing to express opinions in another in which his information is obviously imperfect.

We cannot leave this subject without calling attention to the results very recently obtained by Dr. H. Meyer in his experiments on the action of hydrocyanic acid on animals. The acid which he used was that of Ittner,

\* Remarks and Comments on the trial of John Tawell, by G. L. Strauss; London, 1845.

containing 10 per cent. of the anhydrous acid. He found—1. That the acid had a paralyzing action on the peripheric nerves, i. e. it suppressed sensation and motion, and occasioned congestion with augmented secretion which was chiefly observed in the cavity of the mouth. 2. He found it to act only when received into the vascular system. On mechanically arresting the circulation, the poison did not act, although the integrity of the nervous system was preserved. On restoring the circulation, the operation of the poison was immediately observed. 3. Hydrocyanic acid does not act so rapidly as it was formerly believed. Its operation was never instantaneous. 4. Its fatal effect is owing to paralysis of the heart induced by the topical action of the blood mixed with hydrocyanic acid upon that organ. It required about thirty seconds for the poisoned blood to reach the heart and produce its paralyzing effects, and it mattered not whether the poison was applied directly to the substance of the heart, or to parts remote from it. In Dr. Meyer's opinion, prussic acid may act independently of the brain or nerves, or of their intervention. It requires for its operation, absorption and diffusion until it reaches the heart. It is owing to this, in his opinion, that amphibia are less rapidly killed by this poison than mammalia,—the action of the heart in those animals being less necessary for the maintenance of life.\* Nevertheless, in a certain dose the poison may act upon and paralyse the nervous system producing tetanic convulsions, congestion of the veins, and exudations in the serous cavities. It is not true, as it is generally believed, that in death from prussic acid, the blood does not coagulate. Dr. Meyer found that this liquid coagulated in the bodies of the animals which were killed in his experiments. (Schmidt's *Jahrbücher*, 1844.)

We have here, we believe, given the most recent facts which have been observed with respect to the operation of poisons; and we have thought it the more necessary to do this, because the work before us was completed before the publication of the results above quoted.†

Since the first appearance of Dr. Christison's work, considerable progress has been made in the chemical demonstration of numerous important poisons in the blood. Reasons were formerly advanced by toxicologists, why arsenic, mercury, and other poisons were not likely to be detected; but the improvements of chemical analysis in a few years have now rendered explanations of this kind unnecessary. It may be interesting to the practitioner to know what are the bodies which have been thus found by chemical analysis in the blood, in cases of poisoning. Dr. Christison considers that the evidence in this respect is quite satisfactory "in the instances of iodine, sal ammoniac, oxalic acid, nitre, sulphuret of

\* We have often had occasion to observe that reptiles bear a strong dose of prussic acid with less apparent effect than mammalia. Snakes and frogs have remained for a long time without manifesting active symptoms of poisoning, after thirty drops of the common acid of the shops had been given to them. If the action of the heart is less material to the maintenance of life in such animals than in mammalia, it is the same with the brain and nervous system.

† The mode in which prussic acid operates, arose accidentally in the case of Tawell. It will be seen that there is still much uncertainty in respect to its operation, and further experiments are required to elucidate the subject. The *modus operandi* of poisons occasionally becomes a question even in the "coroner's" court. We knew an instance, lately, in which a non-medical coroner thus summed up a case of narcotic poisoning to a "highly intelligent" jury. "The fact is, gentlemen, we learn from the medical evidence, that the poison was absorbed by the *vascular functions* and carried into the *nerves*!"

potassium, arsenic, mercury, copper, antimony, tin, silver, zinc, bismuth, lead, hydrocyanic acid, cyanide of potassium, carbazotic acid, sulphuretted hydrogen, camphor and alcohol." (p. 19.)

In speaking of the causes which modify the action of poisons, we find the following remarks which are of some practical interest.

"In regard to the influence of chemical combination two general laws may be laid down. One is, that *poisons which only act locally, have their action much impaired or even neutralized, in their chemical combinations.* Sulphuric acid and muriatic acid on the one hand, and the two fixed alkalis on the other, possess a violent local action; but if they are united so as to form sulphates or muriates, although still very soluble, they become merely gentle laxatives. But the case is altered if either of the combining poisons also act by entering the blood. For the second general law is, that *the action of poisons which operate by entering the blood, although it may be somewhat lessened, cannot be destroyed or altered in their chemical combinations.* Morphia acts like opium if dissolved in alcohol or fixed oil; if an acid be substituted as the solvent, a salt is formed which is endowed with the same properties: the sulphate, muriate, nitrate, and acetate of morphia all act like opium. Strychnia, arsenic, hydrocyanic acid, oxalic acid, and many more come under the same denomination: Each produces its peculiar effects, with whatever substance it is combined, provided it does not become insoluble." (pp. 26-7.)

We can hardly agree to the proposition that poisons which act locally, have their action neutralized by combination,—sulphuric acid and a fixed alkali being taken as an instance. *Quoad* a corrosive effect, the action of such bodies is undoubtedly destroyed by combination, but the alkaline sulphate is not the less capable of acting as a powerful irritant in a large dose, and destroying life. Two cases are reported at p. 657, which appear to us to establish this point. The mode of action is altered by combination, but the substance does not become inert. We think the first general law requires some modification, since potash, which has a local action, may by chemically combining with tartaric acid, produce a salt which exerts a poisonous action, (see case p. 658;) and it would appear from what is stated at p. 227, that the author does not consider tartaric acid to be poisonous. So again the second general law,—that poisons which operate by entering the blood, may have their action somewhat lessened, but not destroyed by chemical combination, except in those cases where they become insoluble,—requires to be somewhat modified. At any rate, the following facts appear inconsistent with such a law. The author considers that arsenic chemically unites to the sesquioxide of iron to form an insoluble compound of arsenite of iron, and on this the antidotal properties of the oxide of iron in poisoning by arsenic, are presumed to depend,—so far the law appears correct; a poison liable to be absorbed, is rendered insoluble by chemical combination, and its poisonous effects are said to be suspended. Yet in the case of copper, arsenic combines with the oxide to form the highly insoluble compound known as Scheele's green, which is an active poison, properly placed by the author among arsenical poisons, as it is chiefly to arsenic that its noxious effects are due. Insolubility then does not always render the absorbable poison inert. If it be said, that the acid mucous liquids of the stomach may render it soluble, the same explanation would apply to the arsenite of iron, which, it is alleged, is rendered inert by the addition of a larger quantity of oxide of iron. This

explanation, even if true with regard to arsenite of iron, can hardly be extended to arsenite of copper: for there is no reason to believe that the giving of any extra quantity of black oxide of copper, would prevent the arsenite from exerting a noxious action. The truth is, although poisons soluble in water, act with great readiness, yet a poisonous effect in a substance is certainly not necessarily dependent on its solubility in water, nor even altogether on the quantity dissolved by the acid secretions of the alimentary canal. The action of colomel, subchloride of copper and similar compounds appear, to bear out this view.

Mr. Blake has laid it down that *the salts of the same base produce the same actions, independently of the acids with which they are combined*. Dr. Christison, in adopting this view, says, and we believe correctly, that it applies not only to bases, but to acids—"such as the hydrocyanic, oxalic, arsenious, and arsenic acids." (p. 27.) In assenting to this statement, it seems to us, so far as arsenious acid is concerned, to be somewhat inconsistent with the view that oxide of iron disarms this poison of its virulence. The arsenites of iron and copper contain the same acid, and yet we are called upon to admit that the former is inert (or why recommend it as an antidote) while the latter is a virulent poison!

These facts have an important bearing on the antidotal treatment of cases of poisoning, some have supposed that it was merely necessary to neutralize a poison, such as oxalic acid, by a base; but, as in the case of arsenic, the compound may still exert a poisonous action. Carbonate of soda has been thus improperly given in poisoning by oxalic acid,—the theoretical view consisted in merely neutralizing the poison, but the real practical object is not so much to neutralize it, as to render it inert. Hence no substance can be employed as an antidote, which has itself a noxious action, although it may have the property of neutralizing and rendering insoluble the substance for which it is actually administered. We have heard of a case of poisoning by oxalic acid, in which it was seriously proposed to administer as an antidote, a solution of subacetate of lead. Treatment of this kind is founded on mere chemical theory, without reference to the physiological action of substances.\* In respect to treatment, the following remarks are judicious:

"If the poison, on the other hand, besides possessing a local action, likewise acts remotely through absorption, or by an impression on the inner coat of the vessels, mere neutralization of its chemical properties is not sufficient; for we have seen above that such poisons act throughout all their chemical combinations which are soluble. Here, therefore, it is necessary that the chemical antidote render the poison insoluble or nearly so; and insoluble not only in water, but likewise in the animal fluids, more particularly the juices of the stomach. The same quality is desirable even in the antidotes for the pure corrosives; for it often happens that in their soluble combinations these substances retain some irritating, though not any corrosive power. When we try by the foregoing criterions many of the antidotes which have been proposed for various poisons, they will be found defective; and precise experiments have in recent times actually proved them to be so." (pp. 38.)

\* In the *Annales d'Hygiène*, Juillet 1845, M. Paumet has recommended the protochloride of tin as an antidote in poisoning by corrosive sublimate. The antidote is itself an irritant, but M. Paumet states that when dissolved in fifteen parts of water, it has no irritant properties. Out of twenty-three dogs to which corrosive sublimate had been given, and subsequently this antidote, sixteen recovered and seven died. Two parts of the antidote decompose one of the poison.

Dr. Christison agrees with most toxicologists in considering that there are no constitutional antidotes as they are termed, i.e. none which operate by a counter-action. He appears, however, to look upon ammonia as being, to a certain extent, an antidote for prussic acid (p. 39); although it is very doubtful, whether it can act in any other way than as a stimulant vapour. It has utterly failed when administered internally, and in this respect follows the law on which we have above commented, i. e. prussic acid being an absorbable poison, its action is not destroyed by chemical combination. The author next adverts to Orfila's discoveries respecting the elimination of arsenic by the urine, in the cases of persons labouring under the effects of that poison. Orfila has proposed that this secretion should be artificially increased by the use of medicines, but it appears to us, that little reliance can be placed upon any mode of treatment which necessitates the absorption of the whole of the poison, as a part of it; since there can be no doubt that it is by absorption and circulation through the system that arsenic chiefly acts. An occasional examination of the urine may, however, according to Orfila's suggestion, usefully aid our prognosis.

The chapter on the evidence of general poisoning is purely medico-legal. We do not find that the author has added much to this section of his work. In speaking of the coexistence of marks of poisoning and disease in the dead body, he directs attention to some important matters which a hasty inspector or a hasty reasoner is apt to overlook. We all know by the medico-legal struggle which was lately made in favour of the culprit Tawell, what eagerness was shown by those who conducted the defence, to obtain in the cross examination of the witnesses some sort of admission to the effect that there were marks of disease in the body. The effort entirely failed; but had it succeeded, it is manifest from the numerous cases quoted by Dr. Christison (59), that certain appearances of natural disease are often found in the bodies of persons who have died from poison, without the fair medical inference of death from poison being thereby affected. In admitting the correctness of this opinion, we may observe that there is nothing for which a counsel engaged in defending a prisoner more eagerly seeks, than an admission of this kind from a medical witness. The jury are so much in his hands, and so little in the hands of a witness, (for long explanations on medical doctrines are never allowed in court) that it is easy to foresee how by dexterous management the verdict may be made to run. The only chance of the truth being brought to light in such a case (*veritas in curia!*) is where the symptoms and appearances produced by the disease, are widely different from those caused by the poison alleged to have been taken. On this point, the following remarks should be borne in mind, by those who are engaged in investigating a case of poisoning:

"The conclusions to be drawn from these facts are that, at all events, the medical inspector in a question of poisoning, must take care not to be hurried away by the first striking appearances of natural disease which he may observe, and so be induced to conduct the rest of the inspection superficially; and likewise, that he should not so frame his opinion on the case, as to exclude the possibility of a different cause from the apparent one, unless the appearances are such as must necessarily have been the cause of death. It may be said, that in requiring this condition for an unqualified opinion, a rigour of demonstration is exacted, which can rarely be attained in practice. But, on the one hand, it must not be forgotten, that an unqualified opinion is not always necessary; and on the other hand,



although it were, I think it might be shown, if the subject did not lead to disproportionate details, that we may often approach very near the rigour of demonstration required. At present no more need be said, than that the inspector should be particularly on his guard in those cases, in which the appearances, though belonging to the effects of a deadly disease, are trifling; and still more in those in which the appearances, though great, belong to the effects of a disease, whose whole course may be latent. And I may add, that, from what I have observed of medico-legal opinions, the caution now given is strongly called for." (pp. 59-60.)

In the section on the *causes of the disappearance of poison from the body* nothing is said concerning hydrocyanic acid, although some recent trials have shown that this may become really a most important medico-legal question. The facts connected with the loss of this poison are quite as much deserving of distinct consideration, as those connected with other poisons which are here noticed.

In this section the author has omitted to consider a question of considerable importance in relation to the disappearance of poison, although it has not only been broached on numerous trials in this country, but has lately received a special examination from Orfila.\* We allude to the evidence supposed to be derivable from the presence of a *certain quantity* of poison in the stomach. Dr. Christison rightly argues that the discovery of poison in the stomach is not necessary to the conviction of a person on a charge of poisoning, and adduces some cases bearing out this argument (p. 68); but he does not expose the gross fallacy implied in the assumption, that when poison is found, in order to bring about conviction for the crime, it is indispensable that the quantity detected should be *sufficient to destroy life*. Any proposition more preposterous than this, it is impossible to conceive. Our author shows that in undoubted cases of poisoning, either the poison may not be detected at all, or only in minute fractional proportions (p. 62). The cause of its disappearance, may have been vomiting and purging, absorption or decomposition. Facts of this description, known only to medical men, are sometimes kept in the back-ground in a Court of law, where a certain purpose is to be served; and a counsel is allowed to use his privilege in defence, so far as not merely to conceal them, but to produce a false impression in the minds of the jury. Thus we find the common argument employed—there was not sufficient poison found in the stomach to occasion death—therefore (!) the deceased could not have died from poison! This was an essential part of the defence in the case of Tawell. Admitting, as we do, the full privilege of a counsel to use and misuse as he pleases *legal* doctrines, it is entirely another question, when he resorts to a complete perversion of *medical facts*—involving not only a suppression of the truth, but a suggestion of what is so manifestly erroneous, as scarcely to require a serious argument for its refutation. Orfila quotes no less than eight criminal trials in which this was allowed to become a debated question in France; and it is almost invariably the practice in England, to ask a medical witness whether he found *sufficient* poison in the stomach *to cause death*. If he answers in the negative, there is generally an eloquent appeal for an acquittal to a jury, who are not informed that the poison found in the stomach is only the *surplus* of that which has really caused death! For reasons already assigned, poison may not be found after death, or in

\* Annales d'Hygiène, tome 33, p. 347; Avril 1845.

very minute quantity, or the poison may be of a nature to render it impossible to determine the quantity present, as in the case of strychnia. There are many poisons, which have probably not yet been taken in their smallest fatal doses, e. g. arsenic and corrosive sublimate. Does it therefore follow that, if the quantity found should be less than can be shown to have already killed, that the accused is to be acquitted? Common sense would suggest that such a rule could never be carried into operation. But let us take one of Orfila's illustrations: Oxalic acid has not yet destroyed life in a smaller dose than half an ounce, and it is very doubtful whether two drachms would kill. Is it therefore to be admitted, that in a case of homicidal poisoning by oxalic acid, the medical witness must always produce two drachms at least of crystallized oxalic acid from the contents of the stomach, or that the question of poisoning cannot be entertained? Either this inference must be true, or the greater part of the defence in Tawell's case, to take that as a type of the class, was founded on a simple absurdity which the veriest tyro could expose.

The remarks upon the evidence derivable from experiments on animals, are highly judicious. We agree with the author that these experiments are very equivocal; and that no skilful toxicologist will put himself in the way of delivering an opinion on the force of such evidence. In some recent medico-legal trials, evidence from this source has been carried to a most absurd and unreasonable extent. In the case of Belany the medical witnesses declared that poisoning by prussic acid was accompanied by a shriek as the last act of life, and that this was the immediate precursor of insensibility, (see No. XXXVI, p. 560.) It is obvious that a most material question may be raised on a point of this nature. The absence of the shriek may be taken to negative the fact of poisoning; and all sorts of errors committed, leading to the conviction or acquittal of prisoners on false grounds. In Tawell's case the poetical name of "*death-shriek*" was given by the counsel, to this supposed invariable accompaniment of poisoning by prussic acid. It is almost needless to say that there is no foundation whatever for adopting this theory. The most experienced toxicologists, such as our author, with Orfila and others, would not have failed to record such an extraordinary, and as it was assumed well-marked character of poisoning. But in truth the statement scarcely requires a serious refutation. The witnesses who spoke of this shriek or cry based their evidence upon some experiments on horses and dogs; and because a cry of pain or a shriek was uttered by the animals, the hasty inference was drawn that the same effect was produced in the human subject. The error had currency for a time, and as we perceive, deceived the counsel engaged at Tawell's trial. Such errors are of course only liable to be corrected by accident; but the correction may be regarded in this case as complete; for four instances of poisoning by prussic acid in the human subject have occurred in the presence or hearing of others without any shriek being made—in one case the individual was heard to fall without any cry, in the others there was only a gasping sound heard.\* Independently of these facts, it is quite certain that animals often die from the effects of prussic acid without making any shriek or cry. Another improper use of such experiments has been, among some witnesses, the inference that because animals generally suffer the most violent tetanic spasms when under the

\* Medical Gazette, vol. xxv, pp. 839, 865, and vol. xxvi, p. 463; Provincial Medical and Surgical Journal, Sept. 1844, p. 396; ib. July 23, 1845, p. 461.

influence of prussic acid, the same effect would be produced in the human subject; ergo, in death from this poison, the body of the deceased should always be found in a convulsed attitude or it must have been interfered with. Such an inference is in opposition to numerous observations, but in the mean time, it shows us to what hazardous assertions such experiments may lead.

In treating of the classification of poisons we are glad to perceive that the author has published the interesting statistical tables on poisoning, which were a few years since drawn up by the Governments of England and France. (p. 108.) Above one third of all the cases of poisoning in England are caused by arsenic, and a like number by opium and its preparations. It is to be regretted that similar tables are not issued yearly, although we must admit that they convey rather an imperfect idea of the extent to which the crime of poisoning prevails in this country: 1, because they only comprise the deaths from poison generally; and 2, because with respect to the individual poisons, they are manifestly defective. Some recent disclosures have shown that under the present system of conducting coroner's inquests, i. e. without post-mortem examinations, which are rarely performed unless the rumour of poisoning be so strong, that it would become a public disgrace to neglect it;—persons die from poison, they are buried, and their deaths are registered as from natural disease. Two such cases have come within our knowledge during the present year, and their occurrence argues a very defective state of medical police in this country.\*

In the pamphlet on Borough Inquests by Dr. Birt Davies, we find some remarks so apposite to the subject which we are here discussing, that we think it proper to quote them:

"The three following cases which have occurred within this borough, strongly manifest the necessity for more extensive post-mortem examinations.

"1. A person was found either dead or dying, more than one medical man of eminence seeing the body, within a few minutes of the seizure, pronounced the party to have fallen a victim to apoplexy. It was subsequently proved that the death arose from taking hydrocyanic acid.

"2. A person died in what was considered by the surgeon and physician attending, to have been a fit. Opium was found in the stomach.

"3. A person was attended by a physician and surgeon for some hours,—the illness and death were ascribed to and treated by them for apoplexy; but it was proved beyond all doubt that he died from laudanum."

Such cases as these strongly establish the necessity for not suffering a small consideration of expense to deprive the act of suicide or murder of a most salutary check, i. e. the certainty of discovery. In one of the instances to which we have above referred, the murder of the second child by poison, would assuredly have been prevented had a post-mortem examination been made at the inquest held on the body of the first. The latter, although killed by poison, as it was afterwards proved, was pronounced by the verdict to have died "a natural death," and the registration made out accordingly! So much for the security of a coroner's inquest!

Dr. Christison gives a very complete account of those morbid conditions of the body, which either by the symptoms or post-mortem appearances attending them, closely simulate the effects of irritant poisons. Upon these

\* See also a case of poisoning, in which the coroner refused to allow an inspection although it was imperatively demanded. *Provincial Medical and Surgical Journal*, July 9, 1845, p. 445.

it is unnecessary to make any remark, especially as there is but little which is new in this portion of the work.

In treating of the chemical processes for detecting sulphuric acid in complex organic mixtures, he observes, that although simple at first sight, it is one of the most difficult problems in medico-legal chemistry. Most of the difficulties, however, are really of an artificial kind, they are not very likely to be encountered in practice; and the only object in drawing the attention of medical men to them, is to put them on their guard on a criminal trial for poisoning by sulphuric acid, against the attempts which the *medical* counsel for the defence may make to embarrass their testimony. The mouth, gullet, and stomach may strongly indicate the action of the acid, but when the witness speaks of having detected the poison in the stomach, he may be met with the question, whether Epsom salts (which the deceased may have taken before death) mixed with lemon juice or vinegar (which he may not have taken at all) would not give the same results with the tests as sulphuric acid itself—a question which he is assuredly bound to answer in the affirmative. Thus, then, one of the first steps in an analysis of this kind, is to determine either that there is no neutral sulphate present in the stomach, or that it exists only in small quantity. In poisoning by sulphuric acid, it is scarcely possible for a case to rest exclusively on chemical evidence, or the witness might find some difficulty in explaining to the satisfaction of a jury, these chemical subtleties. On the absorption of the mineral acids we find the following:

“Orfila has proved that sulphuric acid, as well as the two other mineral acids, is absorbed; for they may be detected in the urine, when they are introduced either into the stomach or through a wound. He could not succeed, however, in detecting any of them in the liver or spleen; in which organs it will be seen hereafter, that various other poisons may be discovered by chemical analysis. But Mr. Scoffren seems to have found sulphuric acid in the kidney, even although the individual survived the taking of the poison nearly two days. It is also worthy of remark, that, as will be proved presently, these acids may pass through the coats of the stomach by transudation, and so be found on the surface of the other organs in the belly.” (pp. 159-60.)

In speaking of the tests for nitric acid we find the following: “The most convenient process consists in first ascertaining the acidity of the fluid, then neutralizing it with potash, and heating the residue in a tube with sulphuric acid. The vapour disengaged, if abundant, may be known by its orange colour in the tube and its odour.” (p. 178.) On this we have to remark, that unless the nitre be in some quantity, sulphuric acid will not act in the manner stated. If the saline residue be drenched with the acid there may be little or no red vapour produced: the addition of a small quantity of metallic copper, would however readily cause its evolution under all circumstances, even without the aid of a spirit-lamp.

It is well known that great differences of opinion exist among medical men respecting the toxicological effects of iodide of potassium. Some look upon it as an active poison and proscribe it, others regard it as a safe medicine and use it unsparingly. It may be as well to state what a good authority has been able to collect in relation to this disputed question:

“Discrepant accounts have been given of the effects of iodide of potassium on man. When first introduced into medicine, it was conceived to be an active poison, not much inferior to iodine itself. Many, however, have since had an opportunity of observing that it is in general by no means so energetic. Its me-

dicinal doses were gradually raised from one grain to five, ten, twenty grains; and at last Dr. Elliotson gave to not a few patients so much as two, four, or even six drachms daily in divided doses, without observing any remarkable effect. These and other similar observations however were made at a period when the salt used in British practice was much adulterated, often indeed containing eighty or ninety per cent. of impurity; at the same time it does appear that large doses of a pure salt have been occasionally taken with impunity. On the other hand it has evidently in some instances acted with great force. Mr. Alfred Taylor mentions a case, on the authority of Mr. Erichsen, where five grains produced alarming dyspnoea, attended with inflammation of the nostrils and conjunctiva of the eyes. An instance has been published where twelve grains in four doses occasioned shivering, vomiting, purging, general fever, and extreme prostration; and the purging continued for some days. Dr. Moore Neligan informs me he met with the case of an elderly lady in 1841, who, on taking three five-grain doses for two days, while labouring under irregular gout, was seized with severe headache, thirst, and swelling of the face; which symptoms were succeeded in two days by swelling of the tongue, ulceration of the gums, and profuse salivation for a week. Dr. Lawrie says he has known two grains and a half given thrice in one day, followed by great dyspnoea and irritation in the throat; and is even inclined to think that death resulted on two occasions from repeated medicinal doses. It would farther appear from some important researches made in France, that the protracted use of iodide of potassium in small doses with the food, may produce serious derangement of the health,—swelling of the face, headache, urgent thirst, inflammation of the throat, violent colic pains, and frequently bloody diarrhoea. A disease characterized by the symptoms now described appeared repeatedly as an epidemic a few years ago in various parts of France, and spread so widely in one parish, that not less than a sixth of the whole population were attacked. After several careful investigations, it seems to have been fully proved that the affection was owing to the use of salt fraudulently adulterated with an impure salt, obtained from kelp after the separation of carbonate of soda, and consequently impregnated with an appreciable proportion of hydriodate of potass.

“It is difficult to arrive at any satisfactory conclusion from these statements as to the nature and energy of the action of this salt as a poison. But on the whole it appears to be not in general very active; and the few instances of unusual activity which have occurred may probably be put to the account of idiosyncrasy.” (pp. 200-2.)

In speaking of the vegetable acids, Dr. Christison observes, that tartaric and citric acids may be taken in considerable quantities without injury. He quotes an instance (p. 227) where a person took six drachms of tartaric acid (without the carbonate of potash which should have accompanied it), in twenty-four hours without inconvenience. This may well have been, as from the statement, the acid was obviously taken in divided doses. A case has, however, recently occurred in London which was the subject of a trial for manslaughter, where one ounce of the acid taken by mistake for the compound tartrate of potash and soda, destroyed the life of an adult. Alarming symptoms appeared immediately after the deceased had swallowed the dose, but death did not take place until nine days afterwards. This case then proves that tartaric acid is an irritant poison, when taken in a sufficiently large dose, although by no means so energetic as oxalic acid.

The section on arsenic is undoubtedly the most important in the work. It occupies one hundred and twenty pages, and may be considered as comprising a complete history of that poison. As a reducing agent for arsenious acid, the author now recommends a mixture of crystals of carbonate of soda powdered and incinerated with one eighth of charcoal.

There is a better way, it appears to us, of obtaining this soda-flux, namely, by neutralizing tartaric acid with a solution of carbonate of soda evaporating to dryness, and incinerating in a closed platina crucible. An excellent reducing agent is thereby obtained, in which the charcoal is more finely divided, and more perfectly intermixed with the alkaline carbonate, than it can possibly be by the artificial process above recommended. There is a sort of fashion about the selection of reducing substances for arsenic, and latterly the use of cyanide of potassium has been strongly recommended. By means of it a very good metallic crust is obtained; but the salt has all the disadvantages of the black flux in being deliquescent. Dr. Christison prefers the reduction test to many of the new processes which have been introduced for the detection of arsenic. There is no doubt of the exceeding delicacy and certainty of this test. Any quantity of arsenious acid visible to the eye, may be brought to the metallic state by a little dexterous manipulation. In such small quantities, however, charcoal only should be employed as the reducing agent.

Dr. Christison objects to the term test, as applied to the *processes* for separating metallic arsenic, discovered by Marsh and Reinsch. In strictness of language, he is probably correct, but the use of the word test, is universal and is not liable to give rise to any serious mistake, as all know what is intended by it under the circumstances. The following remarks on the objections which have been urged to the employment of Marsh's test are of practical value :

"The discovery of Mr. Marsh had not been long made before the test in its original simple form was found liable to divers important fallacies. It appeared for example, that antimony yields very nearly the same appearance of metallic crust and of white powder, according to the position of the porcelain in the flame; that some porcelains glazed with oxide of zinc are similarly stained by a flame of simple hydrogen gas; that a great variety of metallic salts, if spirited up into the exit-tube, undergo reduction in the flame, and cause imitative stains on the porcelain; that iron salts seem to form stains from the same chemical action as what occurs in the case of arsenic; and that certain compounds of phosphorous acid with ammonia and animal matter, or even mere animal matters themselves, will in some circumstances produce a stain more or less similar to that which is occasioned by arsenic.

"There is no doubt, that the resemblance of most of these spurious stains to an arsenical crust has been much exaggerated. But still the similarity is sufficient to satisfy every impartial judge, that the mere production of a brilliant metallic, or white powdery stain, or both, upon porcelain is not conclusive evidence of the detection of arsenic in medico-legal inquiries. It is strong presumptive evidence; and the non-production of such stains is absolute proof that arsenic is not present. But in order to obtain irrefragable proof of its presence, the substance which forms the crusts and stains must be subjected to farther examination. And such is the object of the supplementary methods in the process detailed above. That process is perfectly free of fallacy: no substance yet known but arsenic, can yield the succession of phenomena which have been detailed. My opinion farther is, that the process may be safely simplified by withdrawing Berzelius' supplementary test of reduction in the exit-tube, and retaining the test of oxidation only, with the examination of the oxide by liquid reagents. I have retained the former in deference to the opinion expressed by a committee appointed by the French Institute, who examined the whole subject with unwearied zeal, but who, it may be observed, seem never to have had in their view the check-test of oxidation; which, with the consecutive tests, is superior in conclusiveness to the check of reduction only." (pp. 270-1.)

With respect to Reinsch's process we do not quite agree with the author's statement that the liquid containing the hydrochloric acid must be heated to near ebullition before the copper is introduced—"otherwise the copper becomes tarnished though arsenic be not present." (p. 272.) This tarnishing of the metal according to our observation, is only likely to occur where the acid is impure or too much of it is employed. We have seen tarnished pieces of copper rendered bright by boiling them in the diluted acid, and thus made more fit for the experiment. Many experimentalists have failed in the employment of this test, owing to their not having waited a sufficient time for the production of an arsenical deposit. "In the feeblest solutions, ten or fifteen minutes elapse before arsenic is visibly deposited, and forty minutes should be allowed for complete deposition; but in strong solutions, the action takes place in a few seconds." (p. 272.) Long boiling in hydrochloric acid is apt to detach the film, and the cutting of the copper into slips after the deposit, as recommended by the author, is also apt to cause a loss of arsenic. It has been lately proposed not to heat the copper with the film of arsenic upon it, in order to procure octahedral crystals of arsenious acid, but to scrape off the metal, collect it as a powder, and gently heat it in a tube. A larger quantity of arsenic may in this way be accumulated for sublimation. Dr. Christison has obtained satisfactory evidence of the presence of arsenic in the organic tissues, after several months' interment, even when in very small proportion, by the process of Reinsch. He has not found it necessary to incinerate for this purpose. His plan has been to cut the soft solids into small fragments, add distilled water if necessary, then hydrochloric acid to the amount of one tenth of the whole mixture,—and more if the subject of analysis were decayed and ammoniacal, so that there may always be an excess of acid. The mixture is then boiled for an hour, until all soft solids be either dissolved or broken down into fine flakes and grains. Filter through calico, bring the filtered fluid again to the boiling point, and then add the copper. We quote this description because medical practitioners are now expected to be competent to undertake the analysis of the tissues of the body for arsenic, and it is much more simple than the French processes by incineration. We agree with the author, that if the latter be adopted, the carbonization of the organic matter by sulphuric acid is decidedly preferable to Orfila's plan of incinerating with nitre or nitric acid. The latter plan answers very well with Marsh's, but not with Reinsch's process. It should be borne in mind, that in examining for arsenic in the tissues, the organs which are most likely to yield it in the largest quantity, are the liver and the spleen.

No case of poisoning by arsenic now comes to trial in which the most ingenious objections, founded on Orfila's researches and opinions, are not urged to the chemical evidence of the presence of the poison. Rightly or wrongly, applicable or inapplicable, they are invariably raised by a counsel in defence, as so many *chevaux de bataille*, for the purpose not of confuting but of embarrassing chemical evidence. A momentary triumph on a point of this nature may have a wonderful effect with a jury, even although the triumph may be founded in error. It may be beyond their power to follow the intellectual conflict; but they will proceed to draw the rough conclusion that there must have been something wrong, or the medical witness would not

have been embarrassed by the questions. Medical men, conscious of the correctness of their views, are under such circumstances apt to become provoked at the sophistry opposed to them: but there is no remedy for this,—they should remember that the grand object of a counsel in defending a prisoner, is not the development of truth or the vindication of any abstract principle of justice, but the *acquittal* of the party for whom he appears!

In reference to the objection that arsenic may exist in the apparatus employed for the detection of the poison, as for example, in cast-iron where this is used for an evaporating vessel, the author properly censures the proceedings of the French chemists in the celebrated *procès Laffarge*.

"Besides, a false importance has been attached to the enthusiastic analyses of the whole human carcase, with which some French chemists have been astounding the minds of the scientific world, as well as the vulgar, on the occasion of certain late trials for poisoning. I confess I could not find fault with a jury, who might decline to put faith in the evidence of poisoning with arsenic, when the analyst, after boiling an entire body, with many gallons of water, in a huge iron cauldron, making use of whole pounds of sulphuric acid, nitric acid, and nitre, and toiling for days and weeks at the process, could do no more than produce minute traces of the poison. What man of common sense will believe that, with such bulky materials and crude apparatus, it is possible to guard to a certainty against the accidental admission of a little arsenic? At all events I am much mistaken, if any British jury would condemn a prisoner on such evidence,—or any British chemist find fault with them for declining to do so." (pp. 280-1.)

The sum of our information respecting the existence of arsenic as a natural constituent of the human body, is comprised in the following passage:

"This startling proposition was first advanced by M. Couerbe, and by Professor Orfila soon afterwards. The latter subsequently stated that it exists only in the bones, and not in any of the soft solids. It is now clear however that both of these experimentalists must have committed an error. Orfila himself admits that his early researches are vitiated by the subsequent discovery of arsenic in some kinds of sulphuric acid; and all recent attempts by others to obtain his results have failed. Thus MM. Flandin and Danger could not detect arsenic in any part of the human body, when it had not been administered; Pfaff was unable to detect an atom of it in the bones of man or the lower animals by Orfila's own process: Dr. Rees was equally unsuccessful. And in 1841 a Committee of the French Institute, who superintended the performance of an analysis in three cases by Orfila, reported that he failed in every instance to find a trace of arsenic, by a process which could detect a 65th part of a grain intentionally mixed with an avoirdupois pound of bones.

"There is the strongest possible presumption therefore that human bones never contain any arsenic. And besides, supposing they did, the source of fallacy would be utterly insignificant; for, when it becomes necessary to search for arsenic absorbed into the textures of the body, it is never necessary to have recourse to the bones." (pp. 281-2.)

In treating of the symptoms and appearances produced by arsenic, some interesting cases are added, but we find nothing requiring particular notice.

In speaking of the *treatment* of cases of poisoning with arsenic, Dr. Christison regards the hydrated oxide of iron as a chemical and not as a mechanical antidote, the opinion which he formerly entertained. "In



confirmation of these views, and as a fact worthy of investigation on its own account, it is worthy of notice that according to Dr. Duflos, the acetate of sesquioxide of iron answers equally well as an antidote with the sesquioxide itself. It precipitates both arsenious and arsenic acids from every state of solution, and always the more quickly the more the solution is diluted; and the coexistence of acetic acid is no obstacle to this action taking place. More recently Professor Orfila has called in question the absolute efficacy, generally ascribed to the sesquioxide of iron. He alleges that the arsenical compound formed, although insoluble in water, is soluble to some extent in the gastric juices, and is consequently a poison to animals, that the sesquioxide is, therefore, only partial in its operation as a remedy; but yet that the influence of the animal fluids in the stomach, may be overcome by giving it in excess, so that as fast as the compound is dissolved, it is thrown down again." (pp. 365.)

Without admitting the correctness of Orfila's chemical explanation, we think he is right in saying, that the sesquioxide has only a very partial operation as a remedy. We must object to this ready acceptance of Dr. Duflos' statement, concerning the efficacy of acetate of iron, without a single experiment in support of it. Acetate of iron, either concentrated or diluted, precipitates arsenic acid and the arseniates in a white gelatinous mass, it also partially precipitates the arsenites, according to their degree of alkalinity: but according to our observations, it has not the least effect upon arsenious acid, whether in solution or in powder,—whether the acetate be concentrated or diluted, or whether it be pure acetate of the sesquioxide or of the mixed oxides. We should have preferred seeing a statement of Dr. Christison's own results on this subject, to the quotation of those of Dr. Duflos, which are hereby made to acquire greater authority than we believe would otherwise be conceded to them.

Among the tests for mercury we do not find that the author makes any mention of the ingenious process lately devised by Dr. Frampton for separating mercury by metallic silver. The section on mercurial salivation, and on the diagnosis between this state and cancrum oris is full of practical matter, and deserves the serious consideration of those who are called upon to give evidence in cases of suspected mercurial poisoning. In the chapter on lead, we find the addition of the author's late interesting researches on the action of air and water on that metal. To the chapter on mechanical irritants he has appended some remarks on certain saline substances, which have been observed to exert a poisonous action in large doses. This addition was rendered the more necessary by the fact, that questions had arisen at one or two recent trials respecting the operation of such substances.

In respect to the effects of opium on young children, Dr. Christison observes:

"My colleague, Dr. Alison, tells me he has met with a case where an infant a few weeks old died with all the symptoms of poisoning with opium after receiving four drops of laudanum, and that he has repeatedly seen unpleasantly deep sleep induced by only two drops.—These remarks being kept in view, it will, I suspect, be difficult to go along with an opinion against poisoning expressed by a German medico-legal physician in the following circumstances. A child's maid, pursuant to a common but dangerous custom among nurses, gave a healthy infant, four

weeks old, an anodyne draught to quiet its screams. The infant soon fell fast asleep, but died comatose in twelve hours. There was not any appearance of note in the dead body; and the child was therefore universally thought to have been killed by the draught. But the inspecting physician declared this to be impossible, as the draught contained only an eighth of a grain of opium and as much hyoscyamus. In the first edition of this work an opinion was expressed to the same purport. But the facts stated above throw doubt on its accuracy, and rather show that the dose was sufficient in the circumstances to occasion death." (p. 714.)

So many inquests are held on the bodies of young children accidentally poisoned by opium, that the above extract is worthy of attentive perusal. There is too general a disposition to screen the party making the mistake, on the ground that the dose of opiate given was too small to produce serious consequences. Some space is devoted to the effects of opium eating on health, and its bearings on life insurance. No less than twenty-five cases are reported, the results of which tend to show in spite of a prejudice prevailing to the contrary, "that the practice of opium eating is not so injurious to health, and an opium eater's life, not so uninsurable as is commonly thought; and that an insured person, who did not make known this habit, could scarcely be considered guilty of concealment to the effect of voiding his insurance." (p. 721.) The case of Lord Mar, it seems, came to no satisfactory decision. The habit of opium-eating had not been made known to the insurance company at the time of the insurance, and they resisted payment on the ground of material concealment. They lost their cause, however, owing to some technical point, and on the motion for a new trial, a compromise was afterwards entered into.

Much has been lately said and written on poisoning by hydrocyanic acid. The trials of Belany and Tawell, more especially the latter, have caused all English works on Toxicology to undergo a strict examination. Some objections were taken to certain statements contained in them, but we believe chiefly by those who were unable to find in them, any facts in support of the absurd defence adopted in Tawell's case. On the contrary, the facts and opinions were such as to make the guilt of an obviously guilty man, still more clear. While, however, principles could not be attacked, supposed errors of omission and commission were denounced; at the same time there was an astonishing blindness to the errors and defects of the French writers, upon whom the counsel for the defence appears to have relied.

The two main circumstances which have been objected to as erroneous, related to the evidence from the *odour* of the poison, and the *smallest dose* which was required to destroy life. Dr. Christison says, "the peculiar odour of the acid is a very characteristic and delicate test of its presence. According to Orfila, the smell is perceptible when no chemical reagent is delicate enough to detect it. But I doubt the accuracy of this statement; and may further observe that I have known some persons *nearly insensible of any smell*, even in a specimen which was tolerably strong. Hence when the odour is resorted to as a test, it ought to be tried by several persons." (p. 753.) There is no doubt that many persons are insusceptible of the odour of prussic acid; and this may be one explanation of the very discrepant statements which have been published on this subject. Dr. Christison asserts that it was not perceptible in the blood or any other part of the body of the Parisian epileptics, (p. 773,) a statement which has

been condemned as erroneous on Orfila's authority, but which is fully borne out by the report given by Orfila himself in the '*Annales d'Hygiène*,' for 1829. The main point is this: the eminent physicians who inspected the body shortly after death, Adelon, Marc, and Marjolin, could perceive no smell of prussic acid; but in a report published fourteen years afterwards, Orfila states that Gay Lussac and himself detected the odour not at the time of the inspection, but *eight days* after death. We agree with Dr. Christison in placing more confidence in the original report; and in thinking that if two persons could detect prussic acid by the smell, in the contents of a stomach *eight days* after death, it is impossible to understand how at least if the odour were present one out of three experienced physicians should not have discovered it at the time of making the inspection! We are inclined to think that Gay Lussac and Orfila were more likely to have been deceived respecting the odour, than that either Adelon, Marc, or Marjolin should have entirely failed to detect the least trace of it. Had prussic acid been obtained by distillation from the contents of the stomach, a different conclusion might have been drawn, but we do not find this to be any where stated.

The absurdity of the defence of Tawell lay in this: that knowing the great volatility and diffusibility of the poison, also that it is liable to be absorbed and may destroy life in a comparatively small dose,—there is nothing medically speaking impossible, or even extraordinary that a person should now and then be poisoned by a small dose of prussic acid without any odour being perceptible in the stomach. While in the abstract, a principle of this kind could not be objected to, an attempt was made to mislead the Court by pointing out in the report of a particular case, some discrepancies among English and French writers. If the cases of the Parisian epileptics had never been heard of, the principle above adverted to and for which it was quoted, could not be denied,—not to mention that other cases are reported in which no odour has been perceptible; but then the grand object of a lachrymose declamation would have been entirely lost!\*

One of the most important facts connected with the history of this poison relates to the time at which the symptoms commence,—or the period within which it begins to operate. It has been commonly laid down by writers, that the symptoms, if not immediate, commence in a few seconds or at the furthest within a minute. Important consequences may flow from the opinion adopted by a medical witness on this point. The case of Freeman adverted to by the author (p. 767) furnishes a striking instance of this. Dr. Christison candidly acknowledges, that he had given his concurrence rather too unreservedly in the opinion expressed by the majority of the witnesses on this occasion, i. e. that the deceased after taking three drachms of prussic acid, could not have had power to perform certain acts

\* The line of defence in this extraordinary case appears to have been as follows: The two medical witnesses who saw the deceased are young practitioners—they have never seen a case of poisoning by prussic acid—their opinions are therefore based upon what they have read in books—these opinions may be in the main correct and founded on principles well recognised by toxicologists—let us lay aside all consideration of the principles, and attack the cases upon which the witnesses rely. This may have the effect of rendering their evidence untrustworthy with the jury, who are entirely ignorant of medical matters. If, moreover, as a legal point, no witnesses are called, it is impossible that any statements made in the defence, however erroneous in a medical view, can be contradicted by the witnesses for the prosecution. Such appears to have been the policy pursued, and it would doubtless have had the intended effect, but for the clear summing up of the judge. See Remarks on this case by Dr. Skae, *Northern Journal of Medicine*, May 1845.

of volition. He observes, however, "I still adhere so far to my original views, as to think it improbable that if the deceased after swallowing the poison, had time to cork the phial, wrap it in paper, pull up the bed-clothes, and place the bottle at her side, the progress of the symptoms could have been so rapid, and the convulsions so slight, as to occasion no disorder in the appearance of the body and bed-clothes; and I still likewise think, that after swallowing so large a dose, it was improbable she could have performed all the successive acts of volition mentioned above, with ordinary deliberation." (p. 768.) This is an important statement: the author evidently thinks that large doses should either destroy life so rapidly as to prevent the performance of similar acts, or if there be a short survivorship, this ought to be indicated by the body being found in a convulsed attitude, and the bed-clothes disordered. There are several cases on record which are strongly opposed to these views:—they show plainly that the body of the deceased may be found lying in a composed attitude in bed, and the clothes undisturbed under the very circumstances in which such conditions are here regarded as improbable. The only explanation which, it appears to us, can be given of the strong opinions expressed in the Leicester case, is that the facts connected with poisoning by prussic acid were then but little known.

A case which most strikingly proves the fallacy of these views has been lately reported by Mr. Hicks.\* A girl swallowed an ounce of Scheele's acid, in the presence of another person who had no suspicion that she was about to take poison. She was observed to throw her arms over her head, and then to fall to the ground. She died in five minutes without having been in the least convulsed from the first; and it is worthy of remark, that she had had sufficient time to thrust the bottle into the front of her dress before the entire loss of volition. Or take the following more apposite case by Mr. Leithhead.† A girl swallowed an ounce of prussic acid, recorked the phial, thrust the bottle to a full arm's length between the feather bed and the mattress, got into bed, and then drew the clothes over her body: there appeared to have been no convulsions. Cases like these appear to us to prove incontestably that the strong opinions expressed in the Leicester case were wrong; and they show that if inferences from experiments on animals are allowed to be thus applied to the human subject, they may lead to the most serious errors. Let us put the case that the prisoner had been convicted and executed upon this medical evidence; for *this* was the strongest part of the case against him, we could now only have regarded his execution as a judicial murder. The question is not whether such successive acts are performed "with ordinary deliberation," but whether they can be performed at all by a person so situated; and the facts quoted show that this is quite compatible with a much larger dose of the poison, than was taken by the female in the Leicester case. We have no doubt that in another edition, our author will see fit to give up the opinions here expressed, and no longer lend his authority to the diffusion of what we think must now be regarded as erroneous doctrines. We must do him the justice to say that in the same paragraph he qualifies his opinion, by allowing that too great importance should not be attached to his argument on the subject.

Dr. Christison states that when the quantity of poison is small, a much

\* Medical Gazette, vol. 1, new series, p. 462.

† Lancet, June 7, 1845, p. 640.

longer interval may elapse before the commencement of its action. (p. 769.) In proof of this, he quotes a singular case reported in the 'Edinburgh Medical and Surgical Journal' by Mr. Garson of Stromness. A gentleman took, as he supposed, about a teaspoonful of prussic acid, of which the strength was unknown; and a *quarter of an hour* elapsed, before the symptoms came on; he walked about his room and employed himself in writing in the interval. In this case, the dose, as Dr. Christison remarks, was "barely short of what is required to occasion death:" but a long protraction of symptoms may be observed, where the dose is large, a fact strikingly evinced in a case reported by Mr. Godfrey, in the 'Provincial Medical and Surgical Journal.'\* A gentleman swallowed half an ounce of prussic acid, placed the bottle in the grate, walked to the top of a flight of stairs (ten paces) descended the stairs seventeen in number, and proceeded to a druggist's shop (forty-five paces), making a total of fifty-five paces and seventeen stairs. He entered the shop in his usual manner, which was slow and easy, and said in his usual tone of voice "I want some more of that prussic acid"—his eyes then became fixed with a stare, he fell and (died probably) within ten or twelve minutes from the time of taking the poison. In this case, there were no convulsions; and there was an exercise of the powers of volition and locomotion with more than ordinary deliberation. The most remarkable feature of the case was that with a decidedly fatal dose, so long an interval should have elapsed before the symptoms commenced.†

So far then with regard to the period within which the poison begins to operate. We quote these cases, because they show from the attention now paid to the subject of toxicology, that even since the publication of the present edition, important facts have come to light, which may lead materially to modify the views of the author. We shall only add that individuals may labour for a long time under the effects of this poison, and yet ultimately recover. In Mr. Garson's case (*supra*) several hours elapsed before recovery began to take place; and in an interesting case reported by Mr. T. Taylor of Cricklade‡ the patient lay *four hours* in a state of insensibility before recovery commenced. In this instance nearly a grain of prussic acid had been taken.

The smallest fatal dose of prussic acid, the author justly remarks, will vary with particular circumstances, such as the strength of the individual and the fulness or emptiness of the stomach at the time. (p. 770.) The Parisian epileptics were killed by a draught containing two thirds of a grain; and a patient of Dr. Geoghegan's recovered after taking the same quantity, although his life was in extreme danger. Dr. Banks of Louth met with a case of recovery in which the dose was nearly a whole grain. On referring to the report of this case, we do not find the strength of the acid stated—the patient having taken thirty drops of some kind of prussic acid. The statement of the dose in the cases of the Parisian epileptics, has been objected to, as erroneous; but on looking into the matter, it appears to us that the error, if any, arose from the very careless manner in which the case was originally reported by Orfila. A writer in the *Pharmaceutical Journal*, May 1845, p. 515, shows that Orfila has given

\* Sept. 25, 1844, p. 396.

† See also another case of great interest by Mr. Nunneley of Leeds. *Provincial Medical Journal*, July 23, 1845.

‡ *Medical Gazette*, vol. i, new series, p. 130.

two different versions of this dose. Devergie gives a third, and Guibourt a fourth; and the only fair conclusion to be drawn from the whole statement, is that the dose actually taken is known with so little certainty, that in a medico-legal view, it can never again be made available as evidence. Dr. Christison's facts in relation to this question, require some modification, especially since certain well-observed cases bearing upon it have occurred since the publication of this edition of his treatise. The smallest dose yet known to have proved fatal to an adult, was in Mr. Hick's case\*—it amounted to nine tenths of a grain; but in another instance, the same dose was taken without destroying life. It is probable that even less would suffice to kill, and although the opinion of two thirds of a grain being the smallest fatal dose, does not happen to be supported by the case quoted by our author, it is not at all improbable, that this is very near the truth.

In the treatment of poisoning by hydrocyanic acid, the author very properly advises ammonia as a diffusible stimulant and cold affusion. He refers to the antidote lately recommended by the Messrs. Smith of Edinburgh, but remarks that these cases of poisoning are commonly too rapid, to allow of the use of any chemical antidotes. In general the mouth and fauces are spasmodically closed, or the power of deglutition is entirely lost, and too much time would be consumed in the introduction of any antidote by the stomach-pump.

For the detection of the poison, distillation of the fluid is in the author's opinion the best mode of procedure. The objection that hydrocyanic acid may be formed during distillation by the decomposition of animal matter he considers "to rest upon conjecture or presumption at farthest, and I doubt whether, supposing the distillation to go on slowly in the vapour-bath, the heat is sufficient to bring about the requisite decomposition. The force of the objection must be decided by future researches." He then says "that hydrocyanic acid is apt to be formed in the course of the changes produced by various agents in organic matters. These are probably more numerous than the toxicologist is at present aware of." (p. 756.) We cannot help thinking that the author is here giving too strong a support to a doctrine which may tend to overthrow all chemical evidence in cases of poisoning by prussic acid. The admission here made of the spontaneous production of prussic acid in organic matters, will of course be applied by a skilful barrister in defence, to its formation from the contents of the stomach in the dead, or from food swallowed during life in every instance of poisoning by prussic acid. In Tawell's case Mr. Kelly thus constructed a grain of anhydrous prussic acid, found in the stomach, by supposing that the pips of apples (of which none were discovered, although sought for) furnished a fourth—"that there was some little in the cake which she (deceased) had eaten,—suppose there was some in the saliva which she must have swallowed in large quantities, when masticating the apples, and which was known to contain much prussic acid (!)—suppose (and here we think he must have rested upon Dr. Christison's statement in the above quotation,) there was some in the animal substances, and although it was stated that they would not yield prussic acid without being subjected to a greater heat than they had been subjected to, yet it was known that when undergoing decomposition, prussic acid was constantly being evolved," &c. This extraordinary statement was allowed to go

\* Medical Gazette, vol. xxxv, p. 893.

to the jury without any contradiction or remark except that which it received in the charge of the learned judge; and we think therefore it becomes a serious matter for inquiry, whether there be any ground for the allegation that prussic acid is a frequent or even a common result of the spontaneous decomposition which takes place in organic matters.

There is probably no man who has had greater experience on such a subject than the author of this work. We infer that he has never met with an instance, during his numerous researches for poison in organic matters, of this spontaneous formation of prussic acid, or he certainly would have recorded it, and we can only express our surprise that he should have given the slightest encouragement to a theory susceptible of such abuse without producing a solitary fact in its favour. In such a case it appears to us that we ought rather to be guided by well-ascertained facts than by chemical theories.

A process has been recently recommended by Mr. Taylor for detecting prussic acid without distillation.\* If this prove successful, it will do away with at least one of the objections urged by Dr. Schubarth, namely, that hydrocyanic acid may be formed during distillation by the decomposition of organic matters, but neither this nor any other chemical process will suffice to remove the theoretical objection of the production of the poison in organic matters undergoing decomposition. The sooner therefore toxicologists direct their attention to a collection of facts in relation to this subject the better, as it involves the material issue, whether chemical evidence should or should not be received in a case of poisoning by prussic acid. If it be true, as the author asserts, that the cases of its production "are probably more numerous than the toxicologist is at present exactly aware of," we think that every counsel defending a prisoner is justified in objecting to the reception of chemical evidence, where this is based on an analysis of the contents of the stomach.

Many additions have been made to the chapter on poisonous gases, but we find nothing calling for particular notice. The same may be said of the chapters on narcotico-acrid poisoning, which have not perhaps their fair proportion compared with other parts of the work. The tests for most of these powerful alkaloids are very unsatisfactory, and this is probably the reason why the author, even in the case of strychnia and nux vomica, says but little on the subject. The work is closed with a few remarks on compound poisoning, which deserves more consideration from medical jurists than it has hitherto received.

We here close our notice of this valuable work. We have taken the liberty to differ occasionally from the author, and to point out certain facts of comparatively recent occurrence, which may render a revision of some of his opinions necessary. It is needless for us to say that the treatise furnishes the toxicologist with an ample store of well-arranged materials. It has already reached its fourth edition, and the favorable manner in which the work has been received by the profession, is a clear proof of the value attached to the labours of the distinguished author. It has now deservedly become a standard authority in courts of law, and on all difficult questions connected with toxicology, it is a work for reference to judges, barristers, and medical practitioners.

\* Medical Gazette, vol. i, new series, p. 336.

## ART. IV.

*Lehrbuch der Allgemeinen Krankheitslehre.* Von Dr. CARL H. SCHULTZ, &c.—Berlin, 1844-5.

*Elements of General Pathology.* By Dr. C. H. SCHULTZ, Professor in the University of Berlin, &c. &c.—First Part, 1844. Second Part, 1845.—Berlin, 1844-5. 8vo, pp. 738.

Nor long ago we took an opportunity when we were quite in the humour for the work, to examine analytically the doctrines of Professor Schultz, as to the moults and renewals of the blood and tissues. It is in our Sixteenth Volume that we have erected this memorial of our patient endurance of toil. In the present article, we propose to raise a monument of our perseverance by presenting to our readers the principal of those points in pathology to which the Schultzian doctrines are applied by their author.

We premise introductorily, that Prof. Schultz aspires to be a radical reformer in medical doctrines and practice. He proposes (to use his own words) to transfuse the old inorganic spirit of medicine into the organic, and unfold to the unfettered understanding the wonders in the doctrines of life and death and healing. In prosecution of this purpose he heartily attacks existing doctrines, while he makes room for his own. The first onset is in a preliminary dissertation on the present condition of medicine, and on its relations to the sick and to the commonwealth. On looking at the future from the present, the tree of medicine is seen towering like a scintial Colossus, and dwarfing beneath its shade the first shoots of the future. So Professor Schultz thinks; and also that there can be no hope for the development of the future unless light stream upon it through the colossus that ages have reared. He therefore hews at its massy trunk, and drives his wedges into the deep chinks that time has laid open; he barks its gnarled branches; he tears away the old but green ivy that wraps its rottenness to the topmost boughs. He does all this freely too: for (as he observes) we live in civilized societies and in a time when scientific not less than political freedom is as necessary a condition of life as the pure air of heaven.

But if Professor Schultz insists that scientific principles should guide practice, he does not despise the lessons of experience. He utterly abhors the self-styled practical men, who to cover their ignorance, glory in their empiricism. Experience might be blindly followed with safety if it were true, that the same cases recurred again and again, but a thousand variations are seen in the progress from life to death, the causes and origins of which have yet to be investigated. Experience herself teaches us that experience is not sufficient. Man therefore seeks continually after the surer light of general principles, and the sick will suffer in proportion as these are false. Principles must be tested by experience; but it is better that the mind be kept excited by antagonising propositions than be stupefied by gross empiricism.

Principles of the most opposite tendencies have, however, accumulated in medicine; the chemical, dynamical, physical, mechanical are all in active existence. Errors and truths are mingled. The crab creeps out of his old shell, and the snake escapes from its sordid skin, but medicine is



powerless to disburden itself of its effete doctrines. It wants complete renewal, an efficient moulting. This process Professor Schultz is determined to effect.

The First division of the work is occupied with a discussion and refutation of the erroneous doctrines referred to. The chemical theory of respiration and Liebig's views are duly criticised as unsatisfactory and erroneous, both theoretically and practically. Nor does rational physiology receive greater mercy at his hands. In vegetative life, it considers the phenomena as chemical; in animal life as dynamical, as if it were possible, he observes, that two such opposite principles could rule together. These and similar notions of our author we need not discuss. It has been weary work to us who never trouble our readers nor ourselves with discussions of the kind, to read the book. It may be true, as he asserts, existing physicians wear the cast-off wigs of Hippocrates and Diocles Carystus as if they were of the newest fashion; it is our duty to examine the structure and *mode* of Professor Schultz's wig.

*The new researches.* Under this title Professor Schultz comprehends his own researches. To these new inquiries belong, our author states, that on the vegetation of disease, and on the natural consanguinity of disease and vegetable life. This inquiry has a decided bearing on the more intimate knowledge of the death-process in disease. . . . . Plants have an external renewal only (anaphytosis), the inner being wanting. To this state the sick body of man retrogrades, since in it the normal renewal is so interrupted that the two processes of formation and moulting (the formation and excrementitious plastic), as in plants, are intermingled. But the sick body cannot counterfeit plants in other respects by anaphytosis, and it is through this inner restraint on the renewal-process, that the death-process is set up. We prefer giving the somewhat uncouth words of our author as the clearest, although literal expression of his meaning. Disease has a personality given to it. It makes numerous efforts to break out into vegetative life, as in exanthemata, &c. Many botanical terms have, indeed, been introduced into pathology, as fungus, taking root, efflorescence (blooming), eruptions. This is the first of the curls, in his new wig, which Professor Schultz invites his medical friends to inspect and appreciate. And yet, although we decline travelling through the whole round of seventeen new inquiries instituted by the author, we find something worth our gleaning. We will first notice some of his etiological views.

*The inherent predisposing causes of disease.* (Anlage.) These are organic conditions of the system which operate not in harmony with external causes, but in opposition to them. They are not the cause but the basis or substratum of disease. The true and only cause of disease is the death-process and death-power, as the vital power and vital process constitute the cause of life. These causes are to be strictly distinguished from the *conditions* of disease. The predispositions (anlage) under consideration consist in an incongruity in different organic systems and functions of the body, particularly in a change in the normal harmony of acts, as in the healthy oscillation of renewal and moult. There are two general divisions comprising numerous subdivisions. Firstly, there is an abnormal preponderance of single organs and functions over others. In the vascular

system, the heart may preponderate over the capillary system, or the spinal cord over the brain in the nervous system, or the lungs may be incongruous with the vascular system. Secondly, there may be an incongruity between the two renewal-processes of formation and moulting; this may occur in any system and hinder the free course of vital acts within it.

The following are some of the details of the predispositions to disease laid down by Professor Schultz.

*Predisposition in the intestinal mucous membrane.* This mucous membrane casts off its epithelium or moults like the skin, the only difference being that the moulted matter from the latter is dry, while from the former it is mixed with water, and forms mucus. If the excreted mucus thus moulted accumulate, it constitutes a local irritant, giving rise to thickening and inflammatory irritation, and forms a nidus for the reception and development of intestinal worms. Where the excreted matter is retained from debility of the muscular fibre, it acts also as an irritant upon the spinal cord, inducing excito-motory phenomena. It may also interrupt the functions of the membrane, and so a healthy assimilation be prevented, and a morbid state of the blood induced.

*Acidity.* Our readers will remember that on a previous occasion, (vol. XVI, p. 221,) we detailed Prof. Schultz's doctrines as to the acids found in the stomach, especially in the gastric juice. These doctrines are here re-asserted. The gastric juice is not secreted by the stomach, but is a mixture of sour chyle, saliva, and mucus. In a healthy condition of the digestive organs little acid is formed, but when they are weak, a chemical decomposition of the food takes place, and free acid is formed. This decomposition is partly consequent on diminished vital power in the salivary glands and intestinal canal, partly on a defective and vitiated biliary secretion. In consequence of this circumstance, the chyle in the duodenum is not sufficiently de-acidified and vital action cannot preponderate over chemical. Acidity is not confined therefore to the stomach, but may extend through the whole canal, predisposing to diarrhea and gastro-enteritis, as well as to softening of the stomach.

*Predispositions in the lymphatic system.* We pass over some minor points in the pathology of the alimentary canal to notice this head. The whole vascular system is to be considered as a very fine alimentary canal, whose anterior opening corresponds to the lymphatic, and the posterior to the portal system. Consequently, the former is in close relation with the blood; indeed lymph must be considered to be blood in an inferior stage of development, as in the articulates, mollusca, &c. The lymphatics take up fat and albumen from the intestinal canal; the former is the element from which globules are formed, the latter the basis of the plasma. Fat is the product of chylication, and of special kinds of food. The morbid predisposition of the lymphatics can consist only in an irregular formation of albumen or fat. If the former predominate, the lymph is transparent, pale, readily coagulable; but it is milky if fat predominates, and coagulates slowly. As the lymphatic glands act like plasma upon the lymph and initiate the formation of the blood-vesicles, if the functions of the glands be impaired, the latter are imperfect.

*Predispositions in the blood.* Renewal (ananeosis, from the Greek word

*anæstosis*, renovatio,) and moulting are the two principal points with which pathology is connected. Anæstosis or renewal of the blood begins in the lymphatics, as we have already seen. In the lymphatic glands are formed the vesicles which surround the globules, and which are subsequently transformed into blood-vesicles. These vesicles possess irritability and contractility, and in virtue of these properties absorb oxygen, form red colouring matter, work up their nuclei, and develop the plasma. If the vesicles be imperfect, all these changes are imperfectly performed. Their respiring power being impaired, the plasma is imperfectly formed, the colouring matter deficient. The vesicles are pale, chlorotic. When the blood-vesicles are imperfectly contractile, the colouring matter is imperfectly retained. It thus passes out into the plasma, and reddens it, constituting that state which is the normal condition in red worms, molluscs, &c. The plasma is thus rendered capable of absorbing oxygen, and so it excites the nutritive process in organs too strongly. Hence blennorrhœal and glandular inflammation. In chlorotic subjects the vesicles are flabby and incontractile. Anæstotic blood may have vesicles too irritable and contractile. In this state they absorb an excess of oxygen, and stimulate the organs. This condition occurs particularly about puberty contemporaneously with the more rapid development of the lungs. Professor Schultz calls it the neoteretic state (*neotisch-eretisch*.) All the successive changes in the blood-vesicles take place rapidly. They never become old, but are emptied early and moult unripely, constituting an antagonism to the melanotic condition. This neoteretic condition is the basis of the sanguineous temperament: it is also very strikingly perceptible in phthisis, and explains, according to Professor Schultz's ideas, the cerebral activity and sensual quickness observed in the phthisical.

The formation of the plasma may be imperfect; it may contain too much albumen, and consequently too little fibrine. Thereby the blood moves less rapidly, is less stimulant to the vessels, and so passive congestions, and vascular dilatations, particularly of the veins, take place. But on the contrary, the plasma may contain an excess of fibrine and then a diametrically opposite class of pathological phenomena are seen. Nutrition is excessive, and therefore, hypertrophy, active congestions, and inflammations appear. The process of blood-moulting is the basis of several pathological states. We refer our readers to our previous account of the moulting process. In moulting, the vesicles may appear in various states. They contain a large quantity of dark colouring matter, and so their specific gravity is increased, and they easily sink; the membranes are flabby and incontractile, allowing the colouring matter to escape through them: they are unirritable, and are not therefore acted upon by the air and made redder, and finally, their nuclei are quite dissolved away. The blood may be dark in two ways; in the embryo, for example, it is dark from the want of oxygen, and not from the presence of useless vesicles. The arterial blood in the placenta is to the foetus what water is to the fish; the oxygen is supplied scantily by this mode, but so soon as the full pulmonary respiration takes place, the blood changes to a brighter red. Blood may be dark because the supply of oxygen is cut off: this is venous blood and constitutes the "venous state" of Puchelt; or the blood may be dark from imperfect moulting and depuration: this is melanotic blood.

Now the liver is the porta or gate through which the blood is expurgated from the black perilous stuff dissolved in the plasma of melanotic blood. It passes off as bile. But the plasma itself is smaller in quantity, and scarcely stimulant to the blood-vessels, and so the blood moves slowly through the portal system. It moves slowly at all times, but more slowly when the liver is inactive, and the perilous stuff is partially retained. Thus congestion of the portal system, or in other words "abdominal infarction," occurs: and a reflux taking place to its minutest roots, the hemorrhoidal vessels become dilated, and so hemorrhoids arise. The spleen participates in the slow motion of the blood through the portal system, but its office being that of a lymphatic gland with reference to the fluids taken into the system, its morbid changes are analogous to those observed in the other glands of the intestinal canal.

A stoppage of the depurative process in the liver may originate changes in remote parts also. The whole mass of the blood gets charged with the perilous stuff; and 1. The dead vesicles show a tendency even to chemical decomposition, as in cachectic hemorrhages, melaena, stinking secretions, nauseous cutaneous affections. 2. The melanotic blood acts injuriously on the muscular and nervous systems; it is deficient in the stimulating property of healthy blood. Thus the brain, sensual nerves, and muscles, are imperfectly acted on, are weakened, and at last paralysed. Apoplexy, intermittent fever, spectral illusions, and even paralysis of the senses are the result of this state. Melanotic blood will also act on the organs of vegetative life. It is this property that distinguishes it from venous blood. The former always develops cachexies, the latter never.

*Predispositions in the vascular system.* The vascular system is particularly characterized by irritability (we write as our author writes,) but this is shown in varying modes in different portions. It is exhibited in the highest degree in the venous system. The veins are so strongly contractile that they will contract even to the closure of their cavity. Hearts form at almost any point in the veins, as is exhibited in these animals which have several hearts. Arteries differ from veins in this, that their contractility is simply that of cellular tissue; they have great elasticity, but do not contract strongly; arteries have less vital irritability. These characteristics are the foundation of the varying forms of disease presented by the two classes of vessels upon which Professor Schultz duly speculates. We leave these and the like unnoticed to discourse on the

*Predispositions in the liver.* The biliary secretion is influenced by that of the intestinal canal. The actions of the gall-bladder and biliary ducts sympathize with the movements of the latter. In diarrhea bile is excreted more rapidly, in constipation more slowly. Infarction of the liver predisposes to the formation of gall-stones and to hypertrophy.

*Theory of tropical livers.* Hepatitis, yellow fever, bilious vomiting and bilious diarrhea are common in summer and in tropical climates. The predisposition to these consists in the transformation of melanotic into bilious blood primarily in the liver. To understand the origin of this, it is necessary to remember that there are two principal requirements for the due secretion of bile, namely, 1. Colouring matter in the used-up blood-vesicles concurrently with masses of black cruor incapable of acting on the atmosphere or of vital action. 2. That the colouring matter shall be no

longer fixed in the blood-vesicles, but dissolved in the plasma. On its passage through the liver, the portal blood in the healthy condition loses the colouring matter contained in the plasma, it being used in forming the bile.

The cause of this readier solution of the colouring matter in the plasma of the portal blood is to be found, partly in the flaccidity of the membrane of the vesicles, partly in the greater wateriness of the portal blood. Now these two conditions of the blood (the causes of bilious blood) originate in the mode of diet during the heats of summer, or in tropical countries. Firstly, the diet is principally vegetable; secondly, water is drunk to a great excess. That a vegetable diet influences the contractility of the membrane of the blood-vesicles is manifest, Professor Schultz argues from various experiments. He finds that the membrane of the vesicles is smaller and more delicate in herbivorous than in carnivorous animals. The vesicles of the latter yield up their colouring matter much less readily than those of the former. From three to four parts of water washes it all from the blood of sheep or rabbits, while from five to six parts and even more is necessary to render the blood of cats or dogs colourless. The conclusions are obvious. The blood of vegetable feeders and water drinkers most predispose to bilious disorders. The theory fits tolerably well to the problem, for which it is drawn up; and it may be true too that sheep (great grass-eaters) die often of liver complaints. But is the general conclusion true? Do other herbivorous animals so suffer, and are water-swilling, pudding-eating men liable to yellow fever, bilious diarrhea, &c.?

*Predispositions in the lungs.* Firstly, the mucous membrane of the lungs may moult imperfectly, or too quickly. In the former case, the mucus and moulted matter accumulate, and prevent the access of the air to the blood; the latter thus assumes a venous character, and is less irritant; a circumstance of some value to irritable persons. If the membrane moults too rapidly, it is then exposed naked to the air, and thus irritability is excited. This unripe moulting is usual after pulmonary affections.

Secondly, the blood and the condition of the vascular network on the surface of the lungs may constitute predispositions to disease. When vesicles enter the blood from the lymphatic system half developed, (they absorb oxygen quickly?) it is rendered stimulant, and disposes the lungs, in circulating through them, to inflammatory diseases. The blood in the embryo and infant has a similar quality. The vesicles in melanotic blood are flaccid and dead, and are little affected by the air, absorbing less oxygen in proportion as the membrane is flaccid. In this state they do not excite the capillaries to propel them on, and so they heap up in the lungs. This capillary congestion in the lungs reacts on the whole vascular system and even influences assimilation. The breathing is next oppressed, the excito-motory stimulus is not duly developed, and asthma comes on; next palpitation, venous aneurism, paralytic affections of the brain and nerves, and a disposition to bilious and melanotic excretion, even in the lungs themselves. Predispositions may exist in the machinery of respiration. Coughing, sneezing, laughing, and particularly long-continued speaking or singing, may induce congestion, &c.

*Predispositions in the glandular or secreting system.* The glands are

diverticula of the mucous membrane. Their surface then must moult just as the skin, the intestinal canal, or the pulmonary mucous membrane. If this process be abnormal, secretion is at once deranged, and hypertrophy dilatations, indurations, softening, &c., occur. If the moulting process be too active, profluvia are induced. The state of the blood circulating through the secreting organs influences their diseases. Blood containing an excess of carbonic acid only, interferes little with their functions: and the morbid action of bilious blood is slow. Melanotic blood induces congestion in the capillaries, in the mode already stated when referring to the vascular network in the lungs, and hemorrhage takes place. The various changes in the plasma have a much greater influence on the secretions than the blood-vesicles. But as in coagulation of the blood the serum separates, so also it passes off through the secreting organs. In the depurative secretion, it is simply poured out; in the plastic secretions it appears as a new formation from the plasma.

*Predispositions in the nervous system.* The nerves act on the secretions by acting on the blood-vessels to which they are distributed. Of all the secretions, it is the urinary which has the closest relation with the nervous system. Spinal irritation and spasmodic affections generally have important relations also to the state of the blood. Of course melanotic or bilious blood is the most effectual in developing centric phenomena. A predominance in development of the spinal cord over the brain seems to predispose to involuntary excito-motory and spasmodic affections, as in brutes, and in Cretins, Negroes, and Mongols.

*Predispositions in the muscular system.* These appear in the motor nerves on the one hand and in the muscular fibre on the other. The condition of the latter is very much dependent on the condition of the cellular membrane, of which it is a higher grade of development. This is especially seen in the muscles of vegetative life. The skin is the organ through which the moulted debris of the muscles are excreted. Inactivity retards the renewal and moulting process in muscular fibre. The muscles themselves partly retrograde in development to cellular tissue. The blood congests in the peripheral vessels, and the circulation through the heart is less active. In consequence the respiratory and digestive functions are both impaired, and the reaction extends even to the lymphatics, and to the intestinal canal.

We shall not trace our author's views through the successive subdivisions (of age, sex, temperament, &c.) of his subject, as they appear altogether inferential, being in fact deduced from his peculiar theory.

The second portion of this (the first) part, is devoted to pathogeny, comprising an analysis of the death-process. There are three stages in the course of disease: 1, the stage of sickening; 2, of cure; 3, of death. The natural laws of disease are the laws of the contest between life and death. The first is, that the disease is death taking up his residence in the living body. Once there he endeavours to disconnect organic form and irritability, and introduce chemical matter and chemical laws. This is the morbid process. The means to obtain this end is the confusion of the formative with the secretive plastic, whereby the disease became vegetative. In the sick body, the remaining healthy life is a combat and endeavour to repel the chemism and chemical decomposition. Life guards against pu-

tridity; and so our author goes through many a weary page of theory. The few interesting points scattered through the remaining half of the volume have no directly practical interest, and we think our pages will be better occupied with them when others have confirmed the facts on which Professor Schultz builds his reform of medical science.

II. The Second part opens with a catalogue laudatory of the author's new views on the nature of fever, the pathology of the blood, the still-disputed questions of *sthenia* and *asthenia*; his theory of the pulse, and twenty similar questions, through all which we have made a critical pilgrimage, not without wonder that he should toil so and be unconscious the while that he was labouring in vain. In this second part we notice first:

*An analysis of the phenomena of disease.* The *krankheitsactionen*, the actions of disease, as our author chooses to term the phenomena or symptoms of a morbid state, are divided by him into—

1. Injurious or biolytic actions (*actiones biolyticæ*). These belong to the biolytic (life-unloosing) processes and periods of disease, and consist especially in the phenomena of interrupted or abolished function. They may be, *a*, idiopathic, as the dry skin in rheumatism, inflammation, exanthema, the pain in gout, the stupor in cerebral congestion; or *b*, sympathetic, as the impaired digestion in inflammations, the wasting in paralysis. Frequently they are antagonistic, as the dry skin in diarrhea.

2. Conservative or agonistic actions (*actiones agonisticæ*.) These appertain to the conservative processes and periods of disease, and consist principally in the phenomena of reaction of the central organs against the injury to the peripheral organs. The heart, brain, and spinal cord are their seat. Fever and reflex movements belong to this class. They are subdivided thus: *a*. Agonistic actions derived from the central nervous system, as cough in affections of the glottis, vomiting from gastric irritation, the straining in tenesmus, &c. *b*. Fever seated in the central vascular system. *c*. Local agonistic reaction, as in inflammation after wounds, increased secretion from irritation, as of the tears from irritation of the conjunctiva, and the like.

3. Anabiotic or restorative actions (*actiones anabioticæ*.) These belong to the renewing processes after disease, and consist in the phenomena of morbid new formations and morbid moults. There are two classes: *a*. *Actiones epigeneticæ*, or actions of new formation, occurring when the *actiones agonisticæ* and *biolyticæ* cease and the healthy processes succeed to them. *b*. Mould actions, or *actiones apolyticæ*, indicated by the complete desquamation of the skin and moult of the mucous membrane in exanthemata; the death of the cellular tissue (suppuration) in inflammations; the excretion of melanotic blood-vesicles after intermittents, &c.

In these "actions" Professor Schultz finds a basis for his special nosological arrangement, and for the theories adapted to each *form* of morbid action. Fever is discussed as a morbid action (*actio agonistica*) of the vascular system.

*Theory of fever.* Fever is defined to be the "action" by and through which local diseases become general; it is the reaction of the vascular system against disease. Many diseases may exist locally without exciting fever, but it is because they are not of a fatal character. Before they can

destroy life the blood must be implicated in the morbid action, and fever set up. The true characteristic of fever is increased frequency of the pulse, and respiration. Rigors, heat, and sweats do not necessarily accompany fever. The blood is impelled from the centre to the congested periphery, and the pulse is hard in proportion to the amount of congestive resistance. The more the formative and moulting processes are interrupted, the greater the fever. On the contrary, so soon as these processes are being restored, as when the dry skin becomes moist, and the scanty urinary secretion copious, the pulse becomes slower, the heat less, the breathing more free.

*State of the blood in fever.* The febrile reaction of the central vascular system depends on an abnormal self-excitation of the organized constituents of the blood. The normal self-excitation of the vascular system depends upon the renewal of the blood within it—upon its new formation in the lymphatics, its vitalization in the lungs, its moult in the portal system; and further, on its renewal by the nutritive and formative processes going on throughout the whole body. In fever these changes are all interrupted. The vital acts of the blood-vessels go on normally no longer, and in consequence the plasma accumulates in excess, and the blood becomes anaplastic. A secondary result of this is, that the red colouring matter of the blood-vesicles is dissolved into the plasma constituting the red serum of fever-blood, and giving the high colour to the urinary secretion. In addition to this the moult of the tissues, as the nervous and muscular systems, &c. accumulate in the vascular system, the functions of the organs through which they are ordinarily secreted being interrupted. The heat of fever depends on the reaction on each other of the organic constituents of the blood, either locally in an inflamed part, or generally throughout the vascular system.

Professor Schultz considers the cold, hot, and sweating stages of an intermittent as excito-motory phenomena; that, in fact, an ague is a nervous fever of the spinal cord, and that pathologists err in taking its phenomena as the type of those of fever in general. The moult of the spinal cord is interrupted in intermittent fever—of the brain in nervous fever; and the one febrile affection will pass into the other by imperceptible degrees. The rigors, yawning, stretching, and other phenomena depend on the reflex action of the spinal cord while in a state of interrupted moult.

We shall not follow our author through his dissertation on the morbid actions of the vascular system. We may state shortly, however, that under this head he notices successively the different kinds of fever, palpitation, syncope, asphyxia, the morbid pulse and morbid states of the blood. Under the latter head several new and ingenious views are set forth—in direct opposition, we need scarcely remark, to the chemical theories of the day. "The enormous mass of analyses of the blood," he observes, "lie before us like the bones of a slaughtered host, heaped up high as the heavens, so that the life of which they are the offcasts can scarcely be seen." There is detailed, however, no one experiment of his own. Fibrine, according to his views, is not a chemical constituent of the blood, but a tissue first formed out of the plasma during coagulation. We can recommend this portion of the work to those of our readers who are engaged in the philosophy of the physiology of the blood, as an aid to investigation by presenting old facts in a new and altogether hypothetical form.



In the next section, Professor Schultz notices diseases of the organs of respiration, of the formative processes of animal life, or of the cerebro-spinal axis, and of soul-life in which latter are included morbid sleep, dreaming and somnambulism, and morbid spiritual assimilation and plastic.

In the eighth division, the external world as a cause of death is considered, and the author reviews in order the pathological relations of the atmosphere, and its elasticity, temperature, and electricity; the effects of light, and the action of climates, winds, &c. In perusing this portion of Professor Schultz's work we found ourselves breathing freely among more practical matter; and saw with pleasure, that the able Army and Navy Medical Reports, of which from time to time we have submitted a copious analysis to our readers, have been fully appreciated, and freely drawn upon by our author. We note one or two novelties in this section.

*How the atmosphere is purified.* It has been generally understood that plants purify the atmosphere by imbibing its carbonic acid and giving off oxygen. Professor Schultz has, however, instituted a series of researches into the physiology of plants (*Die Entdeckung der wahren Pflanzen Nahrung nebst Aussicht zu einer Agricultur-physiologie*, Berlin, 1844,) by which he shows that this is an error. According to his views, neither manures dissolved in carbonic acid, nor carbonic acid itself are assimilated by plants, but that humus is decomposed by the roots of plants into sugar and gum; that these are changed into vegetable acids, and hence the secretion of oxygen gas by vegetables takes place. It is quite true that in the light they give off the latter, but do not imbibe carbonic acid gas; on the contrary, the roots absorb oxygen gas, and in darkness the leaves, giving off, at the same time, carbonic acid and hydrogen gases. He shows also by these researches that the flowers of plants not only give off nitrogen, both by night and day, and absorb oxygen (a fact already established by Saussure,) but that they also secrete ammoniacal gas. So that in fact so far from rendering the atmosphere purer, plants render it impurer. Professor Schultz adds to these observations, that in winter, when vegetation is dormant, the air contains the least proportion of carbonic acid gas; when, according to the theory, it ought to contain the greatest; and that the latter makes no provision for the purification of the atmosphere from hydrogen, carburetted hydrogen, and sulphuretted hydrogen.

The true explanation is this. The extraneous gases are held in solution by the aqueous vapour contained in the atmosphere, and are precipitated with it in the form of rain. We can thus understand why the atmosphere over the sea is so free from carbonic acid gas; why in summer the feeling of freshness is perceived after a heavy rain; and also since the higher temperature of this season renders the aqueous vapour more copious, and the air more capable of holding this gas in solution, why there is more carbonic acid gas in the atmosphere in summer than in winter. Professor Schultz argues further that the compounds of hydrogen contained in the air are decomposed during thunder-storms by the lightning, the carburetted hydrogen being resolved into water and carbonic acid, the sulphuretted hydrogen into water and sulphuric acid. Heavy rains and thunder-storms are therefore the true purifiers of the atmosphere.

We had marked for notice some views of the author as to the laws of contagion, but we have only room for his general conclusion, that all diseases may under suitable circumstances become contagious. The proposition is supported by ingenious reasoning, but we think his arguments against the idea of a *contagium animatum* are altogether inconclusive.

We have now to state that this Second part is disfigured by some polemics aimed apparently at the author's famous competitor Schönlein—a *novus homo* in Berlin. We observe too that he quotes ourselves, implying that we had noticed his pathological views with approval, whereas we have not until now done more than place before our readers a brief account of his researches into the moults and renewals of the tissues, and accorded to those researches the merit of originality and profundity. The system of medicine which Professor Schultz has founded upon these and his other contributions to experimental philosophy is, we are certain, too hypothetical and too ideal, ever to be generally adopted by physicians. It will nevertheless give him rank amongst the medical philosophers of Germany, as in that country publications of this kind seem to be much more popular than in England or France.

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#### ART. V.

*Report on Smallpox in Calcutta, 1833-4, 1837-8, 1843-4, and Vaccination in Bengal, from 1827 to 1844.* By DUNCAN STEWART, M.D., Superintendent General of Vaccination. *Published by Order of Government.*—Calcutta, 1844. 8vo, pp. 284.

A certain measure of enthusiasm, a contempt of difficulties, perhaps an unwillingness to perceive them, are essential to the successful carrying out of any great and unaccustomed enterprise. Nor is this the case only in the busy scenes of life, but it holds good likewise in the more tranquil domain of science. Seldom, however, does enthusiasm indulge in brighter dreams than when science and philanthropy are hand in hand pursuing the same object. Of all the *idola* by which the mind of the philosopher is misled, none are so pardonable, none, we had almost said, are so respectable as those generated by the warm and loving heart of one who is labouring not for his own good or his own honour, but for the well-being and the happiness of all mankind. Never did scientific philanthropist enter on an investigation in which these fallacies were more likely to abound than in the pursuit of that discovery by which Jenner has immortalized his name, and blessed the world. A man of child-like simplicity of character, of most tender affections, of most ardent and untiring philanthropy, it might have been feared that his fancy would often lead his judgment astray; that the head would too readily give credence to all that the heart longed to believe. His early habits, however, had well fitted him for close and long-continued observation; his love of truth never wavered, and truth therefore never deserted him.

The lapse of time has nevertheless brought to light impediments to successful vaccination, and obstacles to its spread, of which Jenner could not but be ignorant. In our Indian empire especially, to which we owe so much, for which we have done so little, this great boon has been extended to comparatively few, though nearly half a century has elapsed since its

introduction, and smallpox still rages there with undiminished frequency, and unmitigated severity.

"Reviewing," says Dr. Stewart, "the whole history of vaccination in Bengal, I fear it must be owned that its progress has been slow, that its operations have been but partially successful, and that its present state and prospects are unsatisfactory and discouraging. Neither can it be denied that public opinion has been unsettled regarding its advantages, and public confidence shaken in its efficacy and permanence as an antidote to smallpox, a feeling which is not confined to the common people, but prevails more perceptibly among the better informed and reflecting classes of the community, and is not without participants among the profession itself." (p. 261.)

Dr. Stewart's chief object has been to explain the causes of this inefficiency of vaccination in Bengal, and if possible to suggest a remedy. Besides this, he has given a description of three epidemics of smallpox which have prevailed at Calcutta since the year 1832, and has made known the results of his inquiries respecting a coincident epizootic malady which prevailed among horned cattle and some other domestic animals.

The epidemic of the year 1843 appears to have been the most severe of the three, and is that concerning which Dr. Stewart has collected the most extensive information. In each epidemic the ravages of the disease were nearly confined to the natives, and hence opportunities of observing its progress have been much fewer than they would have been in any city of England. The intercourse which medical men in India have with the natives is very slight, since the rich usually employ their own *hakeems*, and few of the poor, except those who are suffering from chronic affections, apply for relief at the dispensaries. Besides this, the superstition of the people nearly precludes them from bringing any case of smallpox to a doctor, since "it is an universal belief throughout the whole country that smallpox and measles are of supernatural origin, and that all medical interferences during their course are highly iniquitous, as they bring down the wrath of the Goddess from whose hands the scourge descends." (p. 221.)

Though the patients, however, do not often come under the care of European medical men, yet a tolerably correct estimate of the mortality from smallpox may be arrived at by an examination of the registry of native deaths kept at the different *Ghâts* and *Ghorastans*, where alone the funeral rites of cremation and interment are permitted to the Hindoo and Mussulman inhabitants respectively. From these it appears that the annual mortality in Calcutta from all causes has been about 5·11 per cent. during the past twelve years; that 4·2 per cent. of this mortality has resulted from smallpox: and that the total deaths from smallpox have been in the proportion of 1 to 458 living. Now, although this rate of mortality is more than four times greater than that which took place in England during the recent epidemic of 1839,\* yet as the mortality from smallpox in London previous to the introduction of vaccination, amounted to 8 per cent. of the total mortality,† our first impression is naturally favorable, and we are inclined to suppose either that smallpox in India is less severe than in this country, or that a very decided influence has already been exerted on it by vaccination. Neither of these

\* Second Report of the Registrar-general, Appendix, p. 17.

† Gregory's *Lectures on the Eruptive Fevers*. London, 1843. 8vo, p. 68.

inferences, however, would be correct. It appears that the bulk of the native population of Calcutta is migratory, consisting of labourers whose families live at a distance, and who remain in the city only until they have acquired a sufficiency to enable them to return to their own homes. "A peculiarity in consequence exists in the character of this population, which though startling is easily accounted for; it is *stationary* in amount, with a great excess of adults." This peculiarity must be borne in mind in any estimate that we may form of the fatality of smallpox in Calcutta. In England 75 per cent. of all the deaths from smallpox take place in children under 5 years of age. We find, however, from an examination of a table showing the ages at death, and the cause of the death of 20,000 native inhabitants of Calcutta, that only 33 per cent. of the deaths from smallpox took place in persons under that age. There seems to be no reason for supposing that infancy enjoys any peculiar immunity from this disease in India, and the discrepancy between this result and that arrived at by the Registrar-general can therefore be accounted for only by the small number of children in the population of Calcutta. If, however, the deaths from smallpox in Calcutta above the age of five years represent as in England only 2-9ths of the total mortality from that disease, we shall be forced at once to raise our estimate of the mortality it produces threefold, and to attribute 12·6 per cent. of all deaths in India to this fatal malady. Even allowing to the fullest extent for all possible sources of error in a calculation founded on such imperfect statistical information, it must nevertheless be manifest that the present mortality from smallpox in India, equals if it do not exceed that in London, at the close of the last century.

We could not describe the general features of smallpox in Bengal more clearly than has been done by Dr. Stewart in the following conclusions, the result partly of personal observation, partly of communications which he has received from medical men in different parts of the presidency:

"1st. All classes and casts of the natives, all ages and both sexes are pretty equally susceptible of infection, the mortality being mainly dependent upon the modifying circumstances of previous inoculation or vaccination, of natural constitution, of present health or feebleness of personal comfort or destitution affecting individuals; and by the particular constitution of the atmosphere, the salubrity of the locality, and the construction of the dwelling.

"2d. The great majority of the victims are totally unprotected either by vaccination or previous inoculation, though the latter practice is most common.

"3d. Those who have undergone the disease previously either naturally or communicated by inoculation, or who have been *successfully* vaccinated, always have the disease in a somewhat *modified* form. The incursive fever is often equally violent, but the eruptive stage is always milder, and the secondary fever proves fatal only in previously debilitated or scrofulous subjects."

Statements in the Third part of this Report, however, do not quite accord with this assertion as to the invariably modifying influence of vaccination.

"4th. In those who suffered from high fever at the onset with much cerebral and nervous excitement, headache, delirium, and severe lumbar pain, unless early destroyed by fever, the eruptive stage succeeds most fully and favorably, affording, though in a confluent form, great relief to the sufferings, and promise of a favorable termination. In these cases the chief danger arises about the 12th and 14th day from the secondary fever then occasioned by the erythematous condition of the skin.

"5th. The worst, and most certainly fatal cases, are those of asthenic type occurring generally in miserable, impoverished, and debilitated subjects, or in

lethargic, scrofulous, and obese constitutions, in which early passive hemorrhages, the result of venous congestion, occur from the mucous surfaces of the bladder and bowels, or from the uterus in women, in which the maturative process is imperfect, and petechiæ or bloody vibices soon cover the skin, death ensuing about the 8th day from anemia, while the sensibilities are fully retained to the last moment.

"6th. The violence of the epidemic is moderated by a damp and hot atmosphere, its diffusion promoted by dry and cold weather." (pp. 50-1.)

The above-mentioned influence of season was remarkably shown in each of the three Calcutta epidemics. A few fatal cases occurred in each autumn; with the first cool day of November the disease became much more active, and the mortality continued to increase during the winter and spring. It remained unchecked by the heats of March and April, but was perceptibly diminished by the falls of rain in May, and disappeared totally on the establishment of the rainy season in July. The same rule governs the appearance and course of the measles and chicken-pox, and applies likewise to the activity of the vaccine virus which becomes almost extinct during the rainy season. Hooping-cough is the epidemic of that period, remittent fever abounds in the autumn, and cholera is always prevalent at the change of season, but especially at the setting in of the cold weather.

Another interesting fact is that the epidemic constitution which impressed its peculiar type and character on any epidemic of smallpox, likewise exercised considerable influence over whatever epidemic succeeded or replaced it. This was remarkably evident in the case of the epidemic cholera which succeeded the smallpox in May 1844, and which was distinguished by the same character of malignancy, and the same absence of attempts at reaction as had attended the former disease.

We now pass to the Second part of the Report, in which Dr. Stewart describes an epizootic disease that prevailed in Bengal in 1843-4. The opinion of the natives with reference to its nature is sufficiently shown by their employing to designate it the word *mattah*, which is one of the Bengalee terms for smallpox. This term, however, is applied, according to Dr. Stewart, very indiscriminately, and is not even restricted to diseases attended by an eruption of the skin. Whenever (as indeed often happens) any fatal epizootic malady appears among the domestic animals of a district, at the same time that some exanthematous epidemic is prevalent among the inhabitants, popular belief usually assigns to each of these diseases the same origin, nature, and name. On both of these accounts, therefore, Dr. Stewart was not surprised to hear in the autumn of 1843, that cattle were dying in great numbers from smallpox. The natives persisted in applying to it the name of *mattah*, notwithstanding the absence of any pustular eruption on the body of the animals. The symptoms generally observed were various indications of fever, such as panting, burning thirst, and loss of appetite, which were followed in a few days by violent purging, profuse salivation, and pituitary discharge from the nostrils. On the fourth day the tongue and palate became ulcerated, the animal began to pass bloody stools, and death usually occurred on the fourth or fifth days. Sometimes death took place as early as on the third day; the mouth being parched, the eyes suffused, and the animal suffering from convulsive tremors.

"In a good many cases," says the author, "certain rough elevations were pointed out to me on the skin, having the hair turned back or ruffled over a small phlegmonous base. A number of these undoubtedly were produced by the burrowing of vermin or bites of insects, but many may also have been pustular without supposing them possessed of a specific character. As no possible good could be expected from experimenting upon human subjects with the matter from such pustules or ulcers, and the consequences could not be foreseen, I did not consider myself warranted in inoculating any children either from the flesh, matter, or the scabs which formed in any of these animals." (pp. 85-6.)

There were but three cases in which Dr. Stewart found papulæ, vesicles, or pustules on the teats or udders of cows; and in none of these cases were the characters of the pustule those of cowpox, nor was the inoculation of four children with the matter taken from them followed by any effect whatever. Both Dr. Stewart and Mr. Greenfield, an extensive cattle-dealer, who had observed the true cowpox in England, are of opinion that the disease did not present any resemblance to it. Dr. Stewart, however, goes on to state that it bore no resemblance whatever to any bovine disease with whose description he is acquainted. From observations so incomplete and details so scanty as those of Dr. Stewart, it is indeed not easy to determine positively the exact nature of the disorder; still, so far as the symptoms and course of the affection are described, they tally exactly with the accounts of the *Pestis bovina*, which committed such ravages among cattle in Europe during the course of the last century. Dr. Stewart's position in India, probably without access to books, explains his ignorance of these accounts. Had he been acquainted with them, they would have taught him that the pustular eruption on the skin of the animals was one of the distinguishing features of the European disease, while the appearance of vesicles or pustules on the teats or udder is very far from being of general occurrence. Inoculation of some healthy animals with the matter from these pustules would soon ascertain whether or no the disease be like the *Pestis bovina* communicable by contagion; but even this obvious experiment was not made. In the absence, then, of any satisfactory proof to the contrary, we are inclined to coincide in the correctness of the native opinion with reference to this distemper among cattle; regretting at the same time that Dr. Stewart should not have detailed the particulars of a single case of this disease, that he should not have made a single post-mortem examination; and that, notwithstanding the prevalence at the same time of a most fatal disease, regarded by the natives as smallpox, among domestic fowls, he should not have taken any pains to ascertain its real nature. But we gladly leave this, which is by far the least satisfactory part of Dr. Stewart's Report; especially as the third part contains much interesting information, and does credit alike to the industry and good sense of the author.

Many pages are taken up with an examination of the defects in the different schemes by which the Indian government has sought to promote vaccination, and by suggestions for carrying it out more effectually. Other causes, however, beside defective administrative measures, tend to prevent the diffusion of vaccination, and the consequent mitigation of smallpox. Most of these causes, though common to India generally, appear to exist in a greater degree in the presidency of Bengal than elsewhere. First, among the influences that retard the spread of vaccination, may be mentioned the prejudices of the natives, among whom "a partiality exists in favour of

smallpox inoculation, founded on ancient usage, and a belief that this disease operates on the bodies of young children as a purifier from the uncleanness contracted during parturition." (p. 229.) That dread of change so strikingly characteristic of all eastern nations contributes not a little towards maintaining this prejudice. Mr. Tweedie, however, mentions in his communication a far more valid reason for the natives' preference of the old method to the new.

"Variolous inoculation," says he, "as performed by the Brahmins, produces a much milder disease than in Europe; a moderate degree of fever, with very slight and often no eruption, I believe to be the usual result, and this is said to be effected by inserting the virus by a number of scarifications over a large surface, and using matter which is rendered less virulent by keeping." (Appendix, p. xx.)

We do not find this peculiar mildness of inoculated smallpox noticed by any other of the gentlemen whose communications appear in this Report. It is a point, however, deserving the most intelligent investigation, and the rather since there would be some reason for doubting whether vaccination in India ever affords the same amount of protection from smallpox which it confers upon the inhabitants of more temperate climates. Dr. Trench, of H. M. 49th foot, writes from Dinapore that he

"... had succeeded in effectually putting a stop to the spread of smallpox in his regiment by extensive revaccination. A marked difference was observable in those who were born and vaccinated in India from those who had been vaccinated in their youth in England. In the latter the general character of the disease was that of modified smallpox; whereas all the fatal cases were found among those born and vaccinated in this country." (pp. 143-4.)

This again is the only statement of this kind contained in the Report; but evidence in abundance is given proving that almost always, in certain districts, and almost everywhere, at certain seasons, the vaccine virus becomes deteriorated, the vesicle assumes an altered appearance, and the disease can often not be perpetuated at all, even with these changed characters. Mr. Gerard writes from Sabathoo that

"During the course of the epidemic (of variola) he was obliged to discontinue vaccination, finding that the climate, at least in part of May and June, was against its success, several cases being instantly superseded by smallpox." (p. 141.)

The Superintending Surgeon at Cawnpore reported, in March 1830,

"Unfortunately at this season the experience of past years has shown that the lymph is *wholly inert* in this climate." (p. 142.)

Mr. Tweedie writes thus:

"Dr. Stewart remarks a point of great importance, viz., that throughout Hindostan the virus is either lost altogether or degenerates in its powers during the hot months, and again resumes its original appearance in the cold season; from which I am led to think that it is only when in full force, so as to affect the system with a febrile irritation, that it can be *depended on* as a prophylactic; and as native children are inferior in energy to European children, the disease is of a less satisfactory character, and the system is often unaffected—hence one principal cause of the want of confidence in vaccination among the natives." (Appendix, p. xx.)

The degeneration of the vaccine vesicle was so great in the year 1837 as to excite Dr. Stewart's apprehensions lest the prophylactic should be entirely lost, and a similar change, though to a less extent, has since been observed annually, from May to September.

"The vesicles at this time became extremely minute, the surrounding induration small, the areola diffuse and ill defined, the course of the disease hurried and unsatisfactory. Yet, strange to say, notwithstanding these unfavorable appearances, I have observed them uniformly to disappear on the approach of cool weather, and the disease resumes speedily in the month of November the perfectly-developed Jennerian character." (p. 153.)

But not merely do the physical characters of the vesicle change at certain seasons, but it is quite evident that at those seasons the potency of the virus greatly declines. In proof of this, we again quote Dr. Stewart, who writes thus, in the year 1841 :

"During the three past years, particularly at holiday seasons, and during the hot weather and rains, I have experienced much difficulty in keeping up what I could consider a healthy and genuine pock. The charges of lymph taken in June, July, and August have almost invariably failed, and I have occasionally been obliged to defer forwarding any supply until September, or later, the cold weather appearing to be by far the most favorable time for propagating the virus in Bengal." (p. 157.)

This mutability in the characters of the vaccine vesicle presents a still more serious impediment to successful vaccination, from the fact that the changes do not always occur at the same season. Mr. J. M. Ston, superintendent of vaccination at Bombay, writes in a letter, dated March 14, 1841 :

"I have in two successive years remarked the periodical alteration in the characteristics of the vaccine to which you allude. In Bombay it has invariably occurred in the hot months of April, May, and June, and not in the rains, at which season and in the cold months it was as perfect as we ever see it. . . .

"In the hot weather the proportion of failures to successfully vaccinated is very great, and I at one or two periods have been apprehensive that the disease might be lost. On reference to the records in office, however, I find that the experience of my predecessor accords with yours, and that in the rains of 1837, 'at the commencement of the monsoon, the vesicle was observed in all the subjects vaccinated to be considerably smaller than usual (about one half), and it continued to exhibit this decreased size without any other alteration in its character throughout the monsoon, but on the setting in of the cold weather the eruption resumed its ordinary appearance.' " (p. 158.)

Here then we have an instance of sudden change in the period at which the degeneration of the vesicle takes place; a change for which there seems to be no assignable reason.

The chief obstacles to the spread of vaccination in India, as we gather them from different parts of the Report (for Dr. Stewart seems but little skilled in arranging his facts, or in laying the conclusions to which they lead before his readers) may be classed under the following heads :

- 1st. Native prejudice.
- 2d. The propagation of a spurious disease owing to the carelessness of native vaccinators.
- 3d. The influence of climate, which for about six months in the year, renders the vaccine vesicle imperfect, and for three out of those six months so modifies the virus as usually to render vaccination altogether unsuccessful.
- 4th. The fact that this influence of climate varies much in different parts of India, coming into operation in some places as early as March, in others not till two or three months later; and the additional fact that a similar variation will take place at the same locality without any known cause.
- 5th. The existence of some constitutional peculiarity in the natives, which renders them indisposed to the reception of the vaccine virus, or at



least interferes with the full development of the vesicle;\* and the circumstance that smallpox after vaccination more frequently occurs in a grave form in the case of the natives of India than of Europeans.

On the other hand the absence of any such prejudices against inoculation and the alleged fact of the great mildness of the disease so produced appear to us not only to warrant, but to demand an examination of the following points:

1st. The mortality from inoculated smallpox among the natives.

2d. The amount of protection afforded by inoculation and vaccination respectively, and the mortality in each case from secondary smallpox.

3d. The influence of locality, climate, and season upon inoculation as well as upon vaccination.

If it were ascertained that the mortality from inoculated smallpox in India is really very inconsiderable, and that the disease thus produced is far less severe than in European countries; if the protection afforded by inoculation be complete and lasting, while that resulting from vaccination is uncertain, imperfect, and transitory, if moreover inoculation be practicable during the whole of the year, while for six months vaccination is either impracticable or of doubtful efficacy, it would become a question what course would be most likely to confer lasting good on the population of India, whether efforts should not be directed towards the easier task of diffusing inoculation, rather than the more difficult one of extending the somewhat questionable boon of vaccination?

We trust that we shall not be misunderstood in these remarks, and that none of our readers will suppose that we introduced a panegyric on Jenner as prefatory to an attack on vaccination. Abundant evidence exists in this volume of the benefits which in many instances resulted from vaccination. Many cases are here recorded of the vaccinated escaping smallpox though the disease was raging around them, or of their suffering from it in a very modified form. It is true that we have not dwelt on the bright side of the picture, but we did so because it seemed to us that more good would be gained by contemplating its shadows. We do not anticipate that the result of a careful investigation would be to establish the truth of that which we have put hypothetically, we do not expect that inoculated smallpox would be found to be really a disease of so mild a character, or that the success of inoculation would be ascertained to be unaffected by celestial and telluric influences, such as modify so greatly the powers of vaccination. We think, however, that difficult though such an inquiry would be in a country like India, it yet ought to be made. They who have directed their efforts to promote vaccination in the East have assumed inoculation to be an almost unmixed evil. Facts have come to light which seem to render the truth of this assumption questionable. Further examination may show it to be perfectly correct: and if not? well, if not—it will yet be worth much to have exchanged uncertainty, for well-founded belief, even though the creed should be somewhat different from that which we have been wont to profess. *Amicus Plato, sed magis amica veritas.*

\* The latter part of this statement has been illustrated by evidence in an earlier part of this article; as proof of the former part we subjoin an extract from a letter from Mr. Smith at Mysore. "Matter," says he, "taken from a small pustule in a native, and one that by no means appeared satisfactory, has almost invariably produced in the European child a perfectly formed large and healthy vesicle." (p. 138.)

## ART. VI.

*Manuel Pratique des Maladies des Nouveaux-Nés, et des Enfants à la Mamelle, etc.* Par E. BOUCHUT, D.M. etc.—Paris, 1845.

*A Manual of the Diseases of Infants and Children at the Breast.* By E. BOUCHUT, M.D.—Paris, 1845. 12mo, pp. 616.

MOST of the treatises on the diseases of children which we receive from our neighbours on the other side of the channel are the productions of the industry of young men during the short time of their stay in the large hospitals of Paris. Hence we often meet in them with interesting observations on morbid anatomy, sometimes with the lucid detail of symptoms, but rarely with remarks of much value on the treatment of disease. The work of M. Bouchut differs from most of these, in that it derives its chief value not from his own researches, but from its embodying the results of the experience of his master, M. Trousseau. The Hôpital Necker, to which M. Trousseau is physician, presents a field of observation different in some respects from that of the Foundling Hospital at Paris, where most French writers on the diseases of early infancy have acquired their knowledge; and more like that afforded by ordinary practice. Many of the children in the Hôpital Necker are suckled by their own mothers, and have not been exposed to the same injurious influences as beset the inmates of the Foundling Hospital. Those of our readers who see the French journals must have frequently noticed the valuable clinical lectures of M. Trousseau, and cannot fail to have been struck with the acuteness of observation which they display. We have heard it reported that he is preparing a work on the diseases of children; but while waiting for it, we gladly receive such an earnest of what may be expected from him as is afforded by M. Bouchut's Manual. A little more labour on the author's part would, we think have made it a better book, and though he speaks in his preface of "numerous observations," we confess that we do not always meet with such traces of them as we could have desired. It is, nevertheless a good and useful work; one which we can safely recommend as a valuable addition to the medical library of any of our readers who feel interest in the investigation of children's diseases.

The first part of the work, comprising nearly a hundred pages, is largely, rather too largely, borrowed from M. Donné's excellent little book on the 'Physical Education of Children.' In the second part, which consists of General Observations on the Diseases of Early Infancy, we find much that is valuable, and meet, for the first time, with traces of M. Trousseau. We should have liked, however, to have been furnished with some means of distinguishing between statements which are vouched for by the teacher, and those for which the pupil only is responsible. Thus, at p. 96 we find the assertion that the yellow colour of new-born infants, *icterus neonatorum*, is not due to jaundice, but depends on the slow absorption of the blood infiltrated into the tissues at birth. In support of this opinion he states that the conjunctiva in these cases does not present a yellow tinge. In this assertion, however, he is certainly mistaken; and not only this circumstance, but likewise the influence of cold in inducing and aggravating it; the association of icterus with induration of the cellular tissue; the influence which purgatives exert in removing the yellow colour of the

skin; and, above all, the fact that not one half of all new-born children are affected by it,—may serve to invalidate his theory.

The expression of the features, the attitude and gestures, the cry, and the various conditions of the abdomen and mouth, are successively examined; and the author then comes to the respiration, and to the results of examination in the chest. Some remarks are made on the character of the respiration in early infancy, which we have already met with in a lecture by M. Trousseau, and which are to a great extent correct. After noticing the variable character in the respiration in early infancy, and the consequent importance of auscultating children under various circumstances, M. Bouchut alludes to the generally received opinion as to the puerility of the respiration of all young children.

"This statement," says he, "may be correct in the case of children of two years of age; indeed, we have often satisfied ourselves of its truth; but it is erroneous if asserted of the new-born infant, or of children at the breast. Respiration is in them neither sonorous nor noisy; it is attended with a sound of slight intensity, quite destitute of all mellowness, but a kind of coarse breathing which cannot possibly be referred to a complete dilatation of the air-vesicles. We have studied this character of the respiration with extreme care. We have repeated our examination every day, and have never heard anything at all analogous to puerile respiration. This fact is easily explained by the difficulty with which the air enters the lung; either on account of the density of the organ or of the minuteness of the pulmonary vesicles. The density of the lung diminishes with the advance of age, while at the same time the diameter of the vesicles increases; two circumstances, each of which is favorable to the production of puerile breathing.

"There exists a close connexion between puerility of respiration and sonority of the thorax. These two phenomena coexist, and if the one ceases, the other disappears. This is readily explicable, since increased tenuity of the pulmonary substance is the cause to which both are due.

"The chest of children at the breast is but slightly sonorous; a fact of which any one may easily satisfy himself. The resonance, however, varies much even in a state of health. It is very slight in fat and healthy children, and more considerable in such as, though healthy, are naturally thin. It changes much and presents singular alternations in the same child and within a very short space of time, independent of any disturbance of the health. Thus, if we percuss the chest for some minutes, an alternate increase and diminution of its resonance become very perceptible; an increase during inspiration, a diminution in expiration. This phenomenon is very marked during the extensive respiratory movements which may be observed in children when crying. Its explanation is easy; the sound is clear during inspiration, that is to say when there is much air in the chest; it is dull in expiration when almost the whole of the air has been expelled." (pp. 121-2.)

To much of this we subscribe, though the facts appear to us rather overstated. The muscular system of the young infant is comparatively little developed, and to the want of the efficient cooperation of the respiratory muscles, it is probably in great measure owing that the lungs are less fully distended than in after-life:—not to any peculiar density in the structure of the lung, nor to the smallness of the pulmonary vesicles impeding the entrance of air. We believe this circumstance, though not noticed by M. Trousseau or his pupil, to be the chief cause of the peculiarity of the respiration in the young child. If, after listening to an infant's chest while breathing gently, as it does at the breast, we again apply our ear during one of those long inspirations which follow a fit of crying, we shall hear the same kind of puerile breathing as in an older subject, although less in-

tense, owing to the smaller size of the lung. In weakly children the respiratory muscles do not lend their aid to carry on the process of breathing; the lung, by its natural resiliency, contracts, and air not being inspired with force adequate to dilate it, it passes into that state of carnification, the true nature of which has been recently pointed out by MM. Bailly and Legendre.

After some remarks on the respiration in a pathological state, there follow notices of the circulation in infancy. M. Roger's recent and most elaborate researches on this subject may dispense us from entering on an examination of M. Bouchut's observations. He next passes, by a natural transition from investigations into the natural frequency of the circulation, to the subject of fever and febrile reaction in children at the breast, the characters of which he traces briefly, but excellently well. He points out how insufficient acceleration of the pulse is to mark the existence of fever, since the pulse ranges in early infancy between very wide extremes, quite independently of any morbid condition. Acceleration of the pulse, however, and heat of skin, when combined with signs of general *unwellness*, indicate its approach. In many points it differs from fever in the adults, since the tongue seldom becomes coated with thick fur, but usually continues moist. Shivering does not occur, but the stage of rigor is supplied by a condition in which the face grows pale, the lips become livid, and the tips of the fingers acquire a blueish tint; and even these symptoms are not observed in the fever which ushers in inflammatory attacks. The temperature next rises two or three degrees, and perspiration breaks out, but never so abundantly in the infant as in the adult: it is a moisture of the skin rather than a copious sweat; often indeed so slight as to be scarcely perceptible. The febrile disturbance that attends acute affections is by no means uniform in intensity: it falls, then rises again, and many paroxysms occur in the course of a single day. In chronic affections the intermittent character of the fever is still more remarkable.

With these remarks on fever the second part of the work closes, and the author enters on the third and last part, in which he treats of the individual diseases. These are classified according to organs,—an arrangement probably as good as any more complicated mode of classification. This part opens with the subjects of dentition considered in its physiological and pathological relations. Some interesting observations are made on the connexion of diarrhea with dentition, from which we make the following extract:

"Of 110 children cutting their teeth, 26 did not suffer from indisposition of any kind, 38 were restless, had stomach-ache, and purging which continued for a very short time, while 46 had abundant diarrhea. In 19 of these latter diarrhea came on whenever the gums became swollen, and ceased when their swelling abated, recurring with the appearance of each tooth, while nothing of the kind was observed in the intervals. In the remaining 28, in whom the process of dentition was very laborious, the diarrhea was persistent and assumed by degrees the characters of inflammatory diarrhea, terminating in enterocolitis." (p. 196.)

Even when this diarrhea is mild it is desirable to check it, since it may otherwise become habitual, and give rise to intestinal disease. In entering on the subject of diarrhea M. Bouchut makes some very good observations on the too great tendency to localize the affection in every instance, and to refer it to some form or other of intestinal lesion. He distinguishes 1st. That form of diarrhea which results from simple acceleration of the

peristaltic movement of the intestines. 2d. That which depends on increased secretion of intestinal mucus; or catarrhal diarrhea. 3d. That which results from inflammatory affection of some part or other of the intestines; inflammatory diarrhea, or entero-colitis. His account of inflammatory diarrhea is one of the most valuable chapters in the book. Entero-colitis is one of the most formidable affections of early infancy; to which period of life it is almost limited. The alterations of the intestine to which it gives rise commence in the large intestine, and by their extension affect the small intestine; a relation just the opposite to that which exists in typhoid fever. The large intestine is usually contracted, owing to the spasm of the muscular coat, while its mucous membrane is thrown into folds, the summit of which present evident marks of inflammation. It is of a red colour of varying intensity, interspersed with little prominent white bodies with a central depression, which are the hypertrophied mucous crypts. The whole membrane is sometimes of an uniform red colour; at other times this hue exists only at the summit of the intestinal folds, where erosion of the surface first appears. The ulcerations are usually narrow, shallow, sinuous, corresponding to the summit of the folds, and may often be overlooked unless the intestine be examined against the light. While these attack the summit of the folds, small, superficial, circular, ulcerations form around the muciparous crypts, but in chronic cases are often found cicatrized, a slight depression only marking their situation. Unless the disease run a chronic course, there is seldom much diminution in the thickness of the mucous membranes, but it is usually considerably softened, so that on any attempt to detach it, it comes away in small fragments.

In the acute stage the submucous cellular tissue is rarely affected. When the disease, however, runs a chronic course this tissue becomes slightly thickened, white, indurated, and sometimes semitransparent. These changes seem to take place just at the time when the spasm of the muscular tunic is causing contraction of the intestine. Thus is produced a non-extensile envelop around a contracted organ which is forcibly compressed, and prevented from returning to its former size. There are no changes of moment in the muscular tissue of the large intestine, and the alterations in the small intestine seldom exceed some degree of congestion with tumefaction and softening of the mucous membrane for a short distance from the ileocecal valve.

It is a disease insidious in its onset, obstinate in its course, and often fatal in its result. And no children are so liable to it as those who are of feeble constitution, or exhausted by previous illness or destitution. Restlessness, causeless cries, irritability of the stomach without loss of appetite, and slight diarrhea, with yellow homogeneous stools, are the earliest symptoms; none of which would lead to the suspicion of any graver affection than catarrhal diarrhea. The child, however, loses flesh, sometimes with great rapidity; it seems ill, low spirited, and in pain. It often refuses the breast, or vomits the milk mixed with bilious matter; and this regurgitation of the contents of the stomach, with efforts at vomiting, returns several times a day. The mouth becomes by degrees dry, red, ulcerated, or coated with aphthæ; the diarrhea increases, and the child passes ten or fifteen motions daily, which lose their yellow colour and assume various appear-

ances; becoming likewise sometimes highly acid. Notwithstanding the severity of these symptoms, the fever which attends them is seldom severe, and after the first two or three days presents distinct remissions. The exacerbations recur at indefinite periods, and the heat of skin during them is sometimes very considerable as well as the acceleration of the circulation. The rise of temperature, however, is far from being invariably synchronous with the increased rapidity of the pulse. If the disease terminate fatally, the fever by degrees puts on a typhoid character; if it pass into the chronic state, the fever becomes distinctly intermittent; its accessions usually taking place twice in the twenty-four hours, but never at regular intervals. The abdominal symptoms remain much the same, but emaciation becomes extreme before death, previous to which the fever generally resumes the continued type.

In hospital practice, the mortality from this disease is very great; more than half of those who are attacked by it dying. Out of an hospital, however, the prognosis is far more favorable.

In many cases great benefit will result from changing the nurse, if the child be still at the breast, or from restoring to it the breast if it had been weaned at an early age. In addition to these and other dietetic measures, M. Trousseau has used emetics of ipecacuanha with great success. The formula he employs is the following:

Ipecacuanha (0.30 to 0.60 grammes) gr. 4½ to gr. 9.  
Simple syrup (40 grammes) = 3x.

Half to be taken by a child from 1 to 2 years of age, and to be repeated in ten minutes.

This dose may be repeated on the following morning, if it should not have produced much effect, but it would not be prudent to carry its employment further.

The acid smell of the breath, or acid reaction of the stools, indicates the employment of the various absorbents. Among astringents, both tannin and nitrate of silver are used by M. Trousseau; the latter in the following form:

Nitrate of silver, 1 centigramme = about gr. 1-6th.  
Distilled water 30 grammes = 3vii, gr. 43.  
Syrup . 10 grammes = 3ij, gr. 34.

Many of these medicines too may be employed in enemata; as 30 or 50 centigrammes of tannin to 150 or 200 grammes of fluid; or 1 or 2 centigrammes of alum, or 5 centigrammes of nitrate of silver. Opium appears to be sparingly used by M. Trousseau, if we may judge from the caution with which the author alludes to its employment. We find, however, to a great extent, the same fault in this as in other French works of a professedly practical nature, namely, that there is no clear exposition of the different conditions under which different remedies become indicated. Such works leave the young practitioner in the position of a person introduced into a large armoury, wherein he sees weapons of all kinds, many of them strange and unknown, and all nearly equally useless, owing to the absence of any one who could explain how each is to be employed.

Passing over several chapters which appear less important, we come at p. 314 to an elaborate article on pneumonia, which presents some points

for criticism. In his remarks on lobular pneumonia, M. Bouchut takes no notice of the interesting observations of MM. Bailly and Legendre on this condition, which they show to be, in the greater number of instances, wholly independent of any inflammatory process, and the result of a return of the lung to its fetal condition, the vesicles emptying themselves of the air, under certain circumstances, of which they give a minute description. A portion of lung which has thus become solid, dark, and apparently condensed, will, like that of a child who has never breathed, assume a perfectly natural appearance if inflated. Though he takes no notice of these observations, however, M. Bouchut repeats some startling assertions with reference to the influence of inflation of the air-tubes upon inflamed lung. These statements, which he originally made in his inaugural dissertation, and which were controverted by MM. Bailly and Legendre, are to the effect that lung in the second or third degree of hepatization may always be distended with air by insufflation, when it will again become crepitant, and float on the surface of water. He now repeats this assertion, though somewhat less positively; he allows that lung in the state of gray hepatization cannot always be thus distended. He reiterates his former statement, however, with reference to lung in the stage of red hepatization, but he gives no details of experiments, without which so strange an assertion will scarcely obtain much credence. We have repeated the experiments several times, and have found that, in the case of a lung being simply congested, inflation will restore the bright colour, and increase the sense of crepitation, but that no such result is produced on lung which is really in a state of inflammatory hepatization. Like MM. Bailly and Legendre, we have found the carnified or fetal condition of the lung in combination with a congested state of the pulmonary vessels, and, in such a case, insufflation will produce exactly those effects which M. Bouchut has described. This state, however, is one very different from true red hepatization, though the author seems not to have sufficiently distinguished between them.

His general description of the symptoms and course of pneumonia is good, though it does not present anything remarkable. We may notice, however, one or two signs on which M. Trousseau partly founds his prognosis in this and in some other diseases, especially as they serve to illustrate the habit of observation which we have noticed as possessed in so remarkable a degree by that physician.

"There are some symptoms," says the author, "whose importance as prognostics seems to have attracted M. Trousseau's attention, who forms a very correct opinion from indications of this sort. The distension of the veins of the hand for instance, like œdema in the adult, coincides with some impediment to the circulation. According to him the sign is of ill omen when present in pneumonia; it shows that a considerable obstacle exists to the aeration of the blood; or in other words that the disorganization of the lung is very extensive.

"The same holds good with reference to tears. This indication of suffering in a child in health, ceases so soon as it becomes ill. The child cries, but the secretion of tears no longer takes place, and they do not begin to flow again till a considerable improvement has taken place in the condition of the patient. This sign deserves then to be taken into consideration: it exists in all the acute diseases of infancy, and in pneumonia among the rest, but is not observed in chronic affections." (p. 338.)

When treating on the subject of whooping-cough, the author notices a fact which, though not unobserved before, had never been insisted on so much as its importance deserves till M. Trousseau directed attention to it. It is that the supervention of any febrile affection in the course of whooping-cough almost always diminishes, sometimes suspends or completely cures the cough, though exceptional cases do occur in which, notwithstanding the supervention of some such affection, the cough continues unalleviated.

M. Bouchut has collected some facts illustrative of points in the history of whooping-cough concerning which we have but little trustworthy information. Of 33 children affected with whooping-cough 24 had previously suffered from catarrh; in 2 it was absent; and in the remaining 7 it could not be ascertained whether or no it had existed. Paroxysms of cough occurred in twenty-four hours after the commencement of the catarrh in 2 cases; in 5 two days after; 1 three days; 4 five days; 1 six days; 1 seven days; 2 eight days; 1 twelve days; 1 fifteen days; 1 seventeen days; 1 twenty-four days; 2 thirty days; 1 sixty days; and in one case the time was unknown. Eight of the 33 died, 12 left the hospital uncured, 10 got well in the hospital, and one after leaving it. In one of those who recovered, the whooping-cough lasted 3 days, in two 11 days, in one 14, one 19, one 20, and in one 23 days; in one it continued for a month, in another for 7 weeks, in one for 3 months, and one did not recover till after the lapse of 10 months. Some other results are elicited from the above data, but the numbers are so small that it is hardly worth while to do more than refer our readers to p. 379, where they will find all details given in full.

The section on cerebral disease opens with some interesting remarks on convulsions, from which we make the following extract:

"We have collected 41 cases of convulsions of children at the breast in 27 of which the cases were idiopathic, in 14 symptomatic. Fifteen of the children, in whom the convulsions were idiopathic, were attacked by them in the midst of perfect health, and recovered without any ill result; 4 died several months afterwards of other diseases, and an examination did not disclose any important changes in the brain. In 12 the convulsions occurred in the course of other diseases which were serious from their commencement, or at the close of pneumonia, or in the course of erysipelas, or of the fever that attends the development of the vaccine vesicle, and 7 of them died. Only 1 of them, however, presented any morbid appearance in the brain, which consisted in the presence of a tubercle surrounded by unchanged cerebral substance, in the centrum ovale of Vieussens on the right side. This summary is very interesting; it shows most positively that convulsions may occur, 1st, in the midst of perfect health; 2d, during the course of acute affections, in which it seems to be analogous to delirium; 3d, that there does not exist any relation between convulsions of certain parts, and particular tissues of the nervous centres; since it appears from our autopsies, that the encephalon of 10 out of 11 children who died at different periods after convulsive seizures presented no morbid appearance whatever.

"The cases of symptomatic convulsions were caused six times by granular meningitis, twice by simple meningitis, four times by encephalitis with and without tubercles, once by real, idiopathic, acute, hydrocephalus, and lastly in one instance by cerebral tubercle without inflammation of the brain." (p. 387-8.)

The frequency of convulsions in children is shown by the fact that of 16 infants who chanced to be at the same time in M. Trousseau's ward, 7 had previously suffered from convulsions, and the affection was hereditary in



the family of several. A remarkable case is related by the author, in which 9 out of a family of 10 children had suffered from convulsions at some period or other, of which 6 had died. He notices other causes of their occurrence besides hereditary tendency; but they are chiefly such as all persons are familiar with. The irritation of over-purgation, however, on which M. Trousseau insists as a cause of convulsions, is too often overlooked, owing to the widely-diffused prejudice which regards convulsions as almost invariably associated with a constipated state of the bowels.

From the consideration of idiopathic convulsions the author passes to those forms of convulsions which are the result of cerebral disease. This introduces him to the subject of granular or tubercular meningitis, of which disease he gives an extremely good description. The account of tubercle of the brain is rather meager, and, with the exception of a case of idiopathic acute hydrocephalus (the word being used in its strict sense), detailed at p. 445, there is nothing particularly noteworthy in the remainder of his observations on cerebral disease.

Remarks on vaccination, and a description of an epidemic of measles which prevailed at the Hôpital Necker in 1843, are succeeded by a brief notice of some skin diseases. The last sixty pages of the work contain an account of various affections not treated of under other heads, among which, however, we are surprised to find no mention of the different forms of the tuberculous cachexia to which children are liable, the chapter on tubercular meningitis, and a scanty notice of cerebral tubercle including all that he says on that most important class of diseases.

#### ART. VII.

1. *Traité Complet de l'Hypocondrie*. PAR J. L. BRACHET, Professeur de Pathologie générale, Président de la Société de Médecine de Lyon, &c.—*Paris et Lyon*, 1844.
- A Complete Treatise on Hypochondria*. PAR J. L. BRACHET, Professor of General Pathology, &c.—*Paris and Lyons*, 1844. 8vo, pp. 740.
2. *Traité Pratique, Dogmatique, et Critique de l'Hypocondrie*. PAR C. F. MICHÉA, Docteur en Médecine de la Faculté de Paris.—*Paris*, 1845.
- A Practical, Dogmatic, and Critical Treatise on Hypochondria*. By C. F. MICHÉA, M.D. of the Faculty of Paris.—*Paris*, 1845. 8vo, pp. 486.

HAD these works reached us at the same time we should have classed them together in one general notice. This not having been the case, we must now give a distinct account of each.

I. M. Brachet's work, as the title-page informs us, was crowned by the Royal Academy of Medicine of Paris. We may, therefore, *a priori*, assume that it has some merit; not forgetting, however, that the critical verdicts, *pro* and *con*, of academies and royal institutions, have sometimes widely differed from those of the public and of posterity. The author's treatise, being elaborate and carefully composed, affords us a suitable occasion for bringing before our readers the subject to which it is devoted. Hypochondria must be allowed to occupy a tolerably prominent place among the

vexing and vexed questions of medical science; and may be said to derive a new interest from the circumstance, that in the nature and phenomena of hypochondria, as well as of hysteria, may be found a solution, in some degree at least, of the perplexing facts of mesmerism.

The disease is described, though without a name, by Hippocrates (and with tolerable accuracy) in the second book of his *Treatise de Morbis*. Galen also gives a sketch of it, in the form of an extract from the works of Diocles of Carystia. But both Hippocrates and Diocles omit some striking peculiarities of the disease as it manifests itself now-a-days, and more especially in this country: and neither attempt to fix, with any precision, the seat or seats of the affection. Galen attributes it to a viscid condition of the blood and to black bile, and notices the gastric derangements, as well as those "*circa ventriculum*;" and his notions have influenced, till a very recent period, his successors in the art. For centuries past, disorders of the liver and spleen, one or both, have been regarded as the peccant causes of the malady.

Aetius appears to have been the first who announced the doctrine which now prevails, that the disease originates in the brain. Holding, as he did, with force, the humoral pathology, he supposed that while the blood in general was *deteriorated*, that of the brain was absolutely *altered* in hypochondria. But he seems also to have believed (and the opinion is plausible) that the disease might have a stomachic origin, since he speaks of a humoral air, rising from the stomach and affecting the brain by the medium or channel of the pneumogastric nerves. Avicenna and, later, Sennert, who both treat of the disease, viewed the stomach as the site of it; and Vieussens, in his '*History of Internal Diseases*,' holds doctrines little different from those of Sennert.

In 1667-70, Willis and Highmore had a controversy on the subject of the pathology of hypochondria, but we shall spare the reader the somewhat idle details of it, nor shall we notice the opinions (in great part mere repetitions of the preceding ones) of Marcucius, Lange, Chatelain, Rondelet, &c. Stahl, in regard to hypochondria, seems to have leant to the humoral pathology, which he repudiated in general; agreeing with the punning enunciation of the ancients, that the "*vena portæ*," was the "*porta malorum hypochondriacorum*." Boerhaave's opinions are fanciful, nor merit the time or space of a lengthened description. Sydenham confounded hypochondria with hysteria. Willis, among the moderns, first announced the doctrine that hypochondria is a nervous disease; but in this, as we have already remarked, he was anticipated by Aetius, from whom also he seems to have borrowed the notion that some morbid change of the blood in the spleen induced the peculiar affection in the brain and nerves, constituting hypochondriasis. Passing over the theories of intermediate and less important authors, we come to those of Lonyer-Villermay, who, while recognizing the affection of the cerebral organ and of the intellectual and moral faculties, conceived the origin and seat of hypochondria to be in the medulla spinalis and the organic nerves. Georget, first, and subsequently Falret and Dubois, endeavoured to show that the disease had its "*local habitation*" in *the brain*, though the received nosological nomenclature suggested a different one. Under the name of "*cérébro-pathie*" Dubois affirmed hypochondriasis to be "*an essential and idiopathic affection of the*

brain ;"—and this is the last definition of the malady which we intend to notice.

We imagine that much of the doubt and dispute connected with the pathogeny and pathology of hypochondria would be put an end to, by a few simple observations by which the subject might be disentangled from some difficulties and obscurities, in which it has been hitherto unnecessarily involved. Two very important points, for example, in regard to which we must endeavour to have clear ideas, are, first, what exactly is the condition, or rather the congeries of phenomena, which constitute hypochondria; secondly, what is meant by the allegation (founded on what appears to be the right pathology of the disease) that hypochondria is invariably a cerebral affection. On these two points we shall make a few remarks.

Hypochondria is not, in any case, a simple or single affection. It is, on the contrary, emphatically a complex one. Three principal orders of phenomena are easily recognizable: first, lesions of the intelligence or the imagination, namely the greatly exaggerated, or (if it be not a solecism to say so) the fanciful feelings and sensations of which the patient supposes himself to be the subject. The second order are those of morbid sensation, and are distinguished from those of the first order, in being apparently *really* felt, though from causes and in a degree different from what would be the case in almost any disease but the one under consideration. The third order of phenomena consists in derangements, not of the sensory, but organic nerves, by which are produced disorders, chiefly functional, in the corresponding organs. Now, without the presence of *some*, at least, of each of these three classes of symptoms, we cannot have hypochondria. For it is observable, that each of the three classes of symptoms may manifest itself separately. Thus, morbid sensations of the most remarkable kind may be present, but without the slightest mental affection of that peculiar sort known as the hypochondriacal. Again, it is notorious, that the greatest functional disorders of the abdominal or thoracic organs may exist, without any abnormal affection either of the physical or of the moral senses, or of the intellectual powers. Lastly, a monomaniacal aberration in regard to the health or the state of the body may have place, yet without any corresponding error of the nerves of sense, or any functional derangement either of the organic nerves or the organs supplied by them. Thus a man imagines himself to have a limb of glass, but, in all other points, eats, feels, and conducts himself like other men. Hence it appears, that, so to speak, the component parts of hypochondria may and often do exist separately; but it is the *union*, the *simultaneous existence* and conjunction of these parts which constitutes hypochondria.

We shall now instance, very briefly, one or two of the most striking symptoms of the three different orders of phenomena. Of the first order, or those which consist in lesion of the imagination or the intellectual faculties, may be instanced the disproportion of the patient's anxiety about himself, to the frequently unimportant nature of his ailments; the tenacity with which his attention is fixed on his own case; his morbid aptitude to fancy himself the victim of every new disease or symptom which he either reads of, or from which he hears that others are suffering; his propensity to dwell on his complaints; to speak of them to every one; and, in describing them, to employ the most vivid and strong language; and

lastly, the *melancholia*, unsociality, and numerous and indescribable whims of manner and idea, which characterize the hypochondriac patient.

The second order of symptoms, or those which consist in lesions of the sensible nerves, are pains of various kinds, and in all parts of the body; feelings of heat and cold; sensations giving rise to a suspicion in the patient's mind, that there are live animals in his stomach, in his chest or abdomen, or under his skin, or in his head, buzzings or explosions in the ear, &c., occasionally great sensibility of the skin.

The third order of symptoms, those namely of an organic site, though generally only functional, consists of pulsations in various parts of the body, which are not to be ranked among *imaginary* sensations, being at least often appreciable by the ear or hand of the practitioner; the occasional slowness, or extreme depression of the heart's action; the vitiation not unfrequently of secretions, as of the mucus or bile; the unusual viscosity of the former; the presence of the same quality along with the almost melanotic appearance in the latter; derangements in the condition of the alvine and urinary discharges, the former of which are often either almost suppressed, or, though liquid, scanty; the latter often presenting the character of hysterical urine.

It thus appears that there is, in hypochondria, present, at the same time, first, moral and intellectual disturbance; secondly, an affection of the sensible nerves, which seems to consist in a morbidly increased sensibility. Of the morbid sensations, thence resulting, the patient is evidently conscious; they become a distinct subject of his intellectual perception; since he comments on them, describes them, often very graphically; although we have every reason to believe, that, whether owing to the peculiar state of the patient's imagination, which prompts him to exaggerate his feelings, or to the exalted sensibility of the nerves of sensation, the causes producing the sufferings of which he complains, would, in persons, *not hypochondriac*, attract incomparably less attention. Lastly, there is disturbance of the function of the organic nerves, since, without organic change and without inflammatory symptoms, there is often long-continued, though it may be, not very marked or serious disorder of the stomach and bowels, the heart, the bladder, &c. In regard to the cerebral phenomena, M. Brachet observes:

"Nothing, doubtless, merits greater attention, than the study of these phenomena. They are indispensable to constitute hypochondria. Without them, all pains the most acute, all sensations the most extraordinary, would not be sufficient to constitute it. That aberration of the morbid imagination must be present, which not only receives painful sensations, but which interprets and draws inferences from them through its own peculiar pathological prism, and which, in its ill-founded fears, gives them the dark hue which itself has, and makes out of them as many grave maladies as the mind can entertain."\* (p. 477.)

The second point, which we proposed to consider, is, in what sense and to what extent it is true that hypochondria is always a *cerebral* affection. The affirmation, that hypochondria is always a cerebral affection, and the accuracy of which, we conceive, is indisputable, is yet widely different from the allegation, that the *train* of symptoms out of which, in their progress and complications, hypochondria ultimately results, of neces-

\* We translate literally, but are not accountable for the incorrect expression of the author.

sity *begins* in the brain. As an *universal* rule, this doctrine is as inaccurate as the former is the contrary. A few observations will, we apprehend, place this in a clear light.

Cases such as the following frequently present themselves. A person has long laboured under stomachic, intestinal, or urinary disease, or suffered from some irregularity in the action of the heart, as for example, intermitting or slow pulse, or from anormal cardiac or arterial pulsations. The patient, during a length of time, exhibits no morbid solicitude about himself or his ailment; but possibly he puts himself, or is put, on a system of physic or diet, and induced to make changes in his habits of exercise, &c., by which as well, it may be, as by his disorder, his general health begins to suffer. Now, at length, hypochondriacal symptoms, indicating that the brain, in common possibly with other organs, has at last been involved, begin to manifest themselves. In this case, though the cerebral affection was obviously necessary to constitute hypochondriasis, till which occurrence the affection, however various, could not possibly be so designated, yet it is plain that the cerebral affection was secondary.

But M. Brachet goes a step further than we have now done, and maintains that even in cases when the first morbid movements in the train of those which issue in hypochondriasis, take place *through* the brain, this organ itself is yet, after all, not primarily but only secondarily affected. We shall allow him to explain himself in his own words:

"We meet with," he observes, "in Dr. Falret (on Hypochondria and Suicide) with the same 'ideas'—the author has just been quoting from Georget—"the same reasonings; of course the same objections are to be made. We still ask; are these causes moral. . . . It is evident that, in these observations, it is necessary to torture facts in order to prove these causes to be exclusively in the brain. Mental occupation in the 'study' (*travaux de cabinet*), a sedentary life, excesses at table, may doubtless predispose to and even cause hypochondria; but most frequently it is not by acting directly on the brain, at the outset. We go further: we say that in three fourths or more of the cases, in which *chagrin*, ungratified passions, have exerted on the brain an action the most powerful and the most direct, it is not by the *encephalon*, that is to say, by the derangement of the intellectual faculties or the imagination, that the malady commences. Always or almost always, it does not revert to the brain, save by a consecutive reaction.\* Let M. Falret, if he pleases, follow the thread of phenomena, and he will perceive that things occur differently from what they would do, were the brain the organ primarily diseased. Yes! such is the fact! the cause of the malady has acted on the brain, but it has not occasioned hypochondria; *chagrin*, for example, has diminished the activity of the circulation, has caused a sanguineous concentration on the central organs of circulation and respiration, and has given rise to painful congestions which render sobbing necessary in order momentarily to give impulse to the respiration and circulation. It has further acted on the apparatus of digestion and principally on the stomach. It has lessened the activity of that organ; the appetite is lost, digestion is bad, and stomach-aches or a *gastralgia* with all its consequences are the result. It is from this assemblage of phenomena or rather from the lesions of which they are the effects (? *actes*) that result the reactions which influence the brain anew, causing it to experience sufferings, and changing its manner of receiving impressions and of reasoning on its sensations. Further, as we have already said, to say that a disease is necessarily cerebral, because the cause has acted on the

\* We translate the author exactly.

brain, would be equivalent to saying that a pneumonia was a disease of the skin, because the cold air which caused it acted primarily on that tegument." (pp. 248-9.)

We, for our parts, cannot see any objection to the view here taken by M. Brachet. We every day meet with cases of dyspepsia, with functional affections of the heart, such as irregular pulse, palpitation, &c., which are clearly traceable to mental excitement or chagrin, and which consequently *must* have been called into existence *through* the brain: yet that organ, in the first instance or perhaps throughout, shall manifest no symptom, either physical or intellectual, of local derangement, or suffering. In such circumstances, a man will tell you that he has had great anxiety about such and such a matter, and that in consequence his stomach and not his brain, is very much out of order. If you question him, he will explicitly tell you, he has pain or weight at his epigastrium, and if you examine his tongue, stools, urine, &c., you will probably find additional evidence of the accuracy of his statement. He will make no complaint whatever of his *head*, and if so, what right have you to presume derangement or suffering to be there?

In stating the above view, we must not be at all understood to maintain, that hypochondria always, or even frequently, originates in the stomach, or in any other organ besides the cerebrum. On the contrary, while we strictly hold that the affection of the latter organ is *indispensable* to constitute hypochondria, we likewise incline to the belief that more frequently than otherwise the disease also *commences* there.

Having discussed the foregoing topics, which, except in so far as they may facilitate the diagnosis, may be viewed as of little practical importance, we now proceed before passing into the therapeutics of the disease, to consider the author's account of the causes, symptoms, and progress of hypochondriasis.

*Causes.* These are either original or acquired. A highly nervous temperament, whether hereditary or induced, conjoined to a natural or accidental *atary* of the biliary apparatus, seems to be the one most particularly disposed to hypochondria. In producing the state of the systems, nervous and biliary, now described, (if not constitutional,) all causes calculated at once to stimulate and exhaust the nervous power, will concur; these causes may be moral or physical, or both; and consist of violent passions, or long continued harassment or chagrin; violent or prolonged mental labour; diseases of various organs, as of the stomach, heart, and as we have said, of the liver; long-lasting pain. Sexual excesses and spermatorrhœa are frequent causes.

In forming the diagnosis, so far as regards the *causes*, between hypochondria and other somewhat-resembling complaints, it may be useful here to notice that melancholia presents, in general, less evident *physical* causes than the disease in question; that hysteria (for hypochondriasis occurring in the female, though much less frequently than in the other sex, may be confounded with the affection just named) is generally connected with uterine irregularity; and that gastralgia is very often caused by obvious abuses of food and drink, and generally curable by a strict reformation of these.

*Symptoms.* We have already referred, generally, to some of the most remarkable of these, and shall not recapitulate them. We omitted to

notice the frequency of borborymi and flatulent distension of the bowels. In forming one diagnosis from symptoms, we must keep in mind, that the sufferer from melancholia is distinguished by much greater reserve as to his complaints than the hypochondriac: that the complaints of the former rather regard others than himself; that the former has a much stronger disposition to suicide than the latter: and that while the former shuns, the latter courts the aid of the physician.

The pure gastralgic or dyspeptic patient, besides presenting, in general, obvious signs of gastric disorder, such as epigastric pain, eructations, a foul tongue, want of appetite, &c., exhibits no mental dependency nor any anxiety about the gravity or issue of his disease, beyond what is quite corresponding with the inconveniences he may suffer from it.

The progress of hypochondria is usually gradual. Recovery where the causes are constitutional is rare. The issue is seldom fatal, and when death ensues, it is often difficult or impossible to trace it to hypochondria, or to be able to show that the chances of life were materially affected by that disease. Nay, on the contrary, it is almost proverbial that hypochondriac patients are long-livers. If the remark has any foundation in truth, it must be accounted for from the unusual care which such patients take of themselves, and the readiness with which they adopt the medical measures suggested to them. Sometimes, however, from the exclusiveness and intentness of their attention to their own case, *dementia* is induced, or else some organic affection of the brain or heart, leading to a fatal result.

*Seat of hypochondria.* This is in the nervous system and in the three several parts of that system: namely, in the intellectual and moral organs; in those portions of the brain which minister to sensation; and lastly in that part of the nervous system which regulates organic life. To a great extent, if not wholly, the intellectual and moral portions of the brain are the seat of melancholia, the nerves of sensation and of organic life not being implicated; and in idiopathic gastralgia or dyspepsia, the stomach is of course the exclusive seat of lesion, the affections of remoter organs being in the first instance merely sympathetic, though, of course, they may ultimately become independent and organic. In this way, indeed, as we have already noticed, hypochondria may be grafted on dyspepsia and on other diseases.

The *prognosis* may be founded on the account given of the progress of hypochondria. It is favorable in so far as a *fatal* result is seldom to be apprehended; but unfavorable as far as regards a radical cure.

The *pathology* of hypochondria is, so far as morbid anatomy is concerned, extremely unsatisfactory. Indeed it may be said that, up to the present time, there is not a single structural change in a tissue or organ, which has been clearly identified as peculiar to hypochondriasis, whether as a cause or an effect; for the occasional morbid changes in the heart, the stomach, liver, spleen, brain, with which the disease is sometimes complicated are so various and so inconstant,—so different in different cases, and so often absent in others,—as to show that, between them and the disease, there is no necessary but only an incidental connexion. Georget and Falret indeed, who, both physicians in hospitals for the insane, biassed probably by the predominant subject of their attention, were disposed to view hypochondria as but a form of insanity, regarded the pathology of the

two as identical: but we shall merely observe that such identity is far from being established. We cannot perceive that M. Brachet, in his voluminous treatise, says anything about the morbid anatomy of hypochondriasis, probably for the satisfactory reason, that there was nothing precise or conclusive to be said.

*Treatment.* M. Brachet devotes a considerable portion of his work (from p. 460 to the end) to what he calls the "Therapeutical history," and the Therapeutics of hypochondria. The reader may anticipate that the pathology and morbid anatomy of the disease being so obscure and undefined, the treatment of it will be very vague and general and various: and a survey of the therapeutical methods suggested by the very numerous authors who have, during two or three centuries, written on the disease, will amply verify this anticipation. The details of treatment into which the author enters, whether by way of comment upon that of others, or as recommended by himself, are most minute and extensive; but we think that we are justified in making upon them the general remark, that they are equally applicable to almost any given disease whatever as to hypochondria. In fact, M. Brachet goes over nearly the whole field of hygiene and therapeutics in general, and brings it to bear on the disease: hence the reader, amid such vast details, loses sight of any *special* bearing which they have (if they have any such) on hypochondria. Both Georget and Falret's prospects of treatment are not very encouraging. "Hygienic measures," says the former, "furnish the principal and often the sole therapeutic resources." "I do not mean to say," observes the latter, "that we are to abstain from every species of medicine." "Place your whole reliance," he elsewhere remarks, "on the cerebral treatment, and on a wisely arranged regulation of the patient's life: recommend the use of simple aliments, soothing and easy of digestion. Proscribe aromatics." This is surely very *dilute* therapeutics, if we may be allowed to use the phrase. He afterwards gives his opinion of the expediency of bitters, chalybeates, tonics, purgatives, which we shall notice in due course.

In the department of the work now under notice, namely, the therapeutic, a considerable space is occupied in "enumeration and examination of the means advised against hypochondria." (p. 508 et seq.) Soothing treatment is that first noticed, and the mere names of the five classes into which Brachet divides it, will suggest to the reader the nature of it. Those are: 1st, temperant or diluent; 2d, mucilaginous or gummy; 3d, acidulous; 4th, analeptic, consisting of decoctions of veal, fowl, frogs, &c.; 5th, oleaginous. We shall not pause to make a single remark on this section (p. 514,) since there is nothing in it which calls for observation.

The expediency of milk as a diet in the disease is discussed in a separate section at p. 525. Hoffman, Cheyne, Tissot, Villermay, Dubois highly recommend it. The author himself, while remarking that it may be occasionally useful, and that its suitableness or unsuitableness can only be determined by careful and *prolonged* trials of the substance; in various forms and at different times of the day, makes the following very judicious practical observations in regard to this kind of diet, which we can fully confirm from practical observation. "In other circumstances, it (milk) weighs on the stomach, which has difficulty in passing it into the duodenum; it there acquires even acid and sharp qualities which cause pains and



weight, flatus and nausea. In this case, milk is no longer soothing; but it is not irritating by its physical and intrinsic qualities; it only becomes so from its deficiency of stimulating power on the organ of digestion, which, instead of digesting, remains in a state of torpor." (p. 527.) In connexion with the same substance and subject, we quote the following remark from the succeeding page, on account of its general applicability to all cases in which the expediency of a milk diet may be a matter of consideration. "We agree with Sauvages in regarding milk as contra-indicated, in pituitous hypochondria, when the mucous membranes have become the seat of an abundant mucous secretion, conjoined to general debility; in all cases where there is idiopathic feebleness, independent of any organic lesion or of an ataxic nervous irritation of which it might be the consequence."

Antiphlogistic treatment is discussed at p. 542. Bloodletting, of course, occupies the first place, under this head. And on the principles and effects of bloodletting, the author's observations are exceedingly concise, just and perspicuous. He properly observes that in case of suppressed hemorrhoids, bloodletting by means of leeches is indicated: and that of course, any symptom leading to suspicion of cerebral congestion demands emission of blood either general or local. He also reasonably observes that "when an hypochondriac is young, of a good constitution, and of the sanguine temperament, when, above all, the malady is recent, bloodletting may be more useful and less hurtful." (p. 550.)

Soothing (calmante) treatment is next discussed. Under this head are comprised, hypnotics, anodynes, sedatives, narcotics. This species of treatment has, according to the author, three actions on the economy, a gastric, a nervine, and a cerebral. His remarks on this class of drugs are few and not very satisfactory. Opium, he believes, to be sometimes useful. For our own parts, the hypochondriac cases are very rare indeed, in which we should think of resorting to it. M. Brachet very properly remarks, after reminding us that hypochondriacs are "ordinarily tormented by an obstinate constipation" (p. 555,) "that opium, by diminishing the intestinal secretions and rendering sluggish their muscular contractions, augments instead of diminishing this constipation." And adds justly, that this circumstance should always be kept in view, in prescribing this substance.

In the remarks on antispasmodic treatment (p. 557,) and on the loadstone (p. 567) we find nothing to detain ourselves or the reader. At p. 569, we have some observations on animal magnetism and on somnambulism. Part of these we must be permitted to quote, were it for no other reason than for the author's amusing vivacity of expression.

"From the magnetism of Mesmer has gone forth animal magnetism. This second jugglery, twenty times prostrated by science, reason, and facts, lifts anew from time to time, its head, more amusing and more ridiculous than dangerous. We do not, however, deny the effects which the passes and other magnetic grimaces may produce on a person of a very nervous hysteric or hypochondriac constitution. . . . . We can conceive the possibility of the thing; cases of cure are cited. We do not, however, know any such which has been verified. Hence we do not regard this magnetism, even freed from all its parade of charlatanism, as a means on which we ought to reckon in hypochondria. We think, on the contrary, it is much more likely to be hurtful.

"If we observe some sort of reserve in regard to magnetism, we shall not do

the like in regard to somnambulism, in connexion with which we have never seen any but rogues and dupes, and sometimes those burlesque imaginations, which long to fix the public attention, and to be the subject of its discourse at any price. Those distant journeys made without the person quitting his chair, those divinations, those transpositions of the senses, &c., are farces invented to amuse idlers and entrap fools. It may, however, chance that a weak and hypochondriac patient, strongly prepossessed in favour of this culpable jugglery, may derive from it some good effects; but then it is because he shall have been himself the dupe of his imagination and credulity, and not because he shall have been the subject of any real influence." (p. 570.)

Electricity is considered by M. Brachet as rather adapted to cases in which "the nerves are in a state of debility and atony near to paralysis, than when they are in a condition of too great erethism." (p. 573.)

We have several pages on the advantages to be derived from music in hypochondria. In selecting airs adapted for soothing the patient, we are directed (p. 576,) "to choose those which are most to his taste, which he loves most, and which, therefore, can best recall his imagination to its normal rhythm; for we must not think that gay airs are always those which will best succeed. The heavy and monotonous *Ranz des Vaches*, and the still more heavy *God save the King*, sound as agreeably to the ear of the Switzer or the Englishman, as to that of the Frenchman do "Vive Henri Quatre," or "Allons Enfants de la Patrie," &c.

*Tonic treatment.* Falret, we have already observed, was opposed to the use of chalybeates and bark in hypochondria. As Brachet justly remarks that debility is "rarely idiopathic or essential," and he judiciously cautions the practitioner not "to allow himself to be imposed upon by apparent debility; that he must not forget that nervous mobility and irritability are usually so great, as that he cannot be two distrustful of them," (i. e. tonics, more particularly chalybeates;) "that he must examine carefully the state of the circulation; an artery hard and tense, too much plasticity of the blood, contraindicate" tonics. (p. 583.) He directs particular attention to the state of the bowels, previous to the use of tonics; and most justly adds, in conclusion, "it must not be concealed, the cases in which tonics will do good are very rare." The cases in which chalybeates will be found useful, are those in which hypochondria occurs in "a constitution deteriorated, cacochymous, lymphatic, and with impoverished blood." M. Brachet, in such cases, advises their conjunction, with aromatics or bitters, such as canella, gentian, sarsaparilla, rhubarb, &c." (p. 586.)

M. Brachet's comments on "the treatment recommended against hypochondria," extend further through the following heads: evacuant, vomitive, purgative, sudorific, revulsive and derivative treatment; treatment by mineral waters, baths, injections, the trepan; moral and hygienic treatment; exercise and travel. Among all these, we would ourselves place most faith in a judicious system of mild purgative treatment, not too long continued, and of a course of mineral waters, with, it need not be added, due attention to exercise, diet, and moral recreation and regulation. In many cases of hypochondria, mild purgatives combined with tonics, are indicated. Indeed we have seldom seen a case in which they were not. Purgatives, as we have just observed, are neither to be given by themselves, nor are they to be so long continued as to debilitate: they must be combined with tonics. The report of the patient as to the regularity or condition of

the alvine discharges must not be trusted to. The physician must satisfy himself on that head, and it is surprising how widely, on many occasions, his own observations will differ from those of the patient.

At page 646, M. Brachet lays down his own system of treatment, which he entitles "Methodical treatment," and which he thus divides: 1, Treatment of simple or slight hypochondria; 2, of chronic and constitutional hypochondria; 3, treatment of predominant symptoms; 4, treatment of the causes of hypochondria; 5, treatment of its complications; 6, treatment of convalescence and relapses; 7, prophylaxis.

From the comments which the author makes on the treatment of others, and which we have gone over at some length, a fair idea may be formed of M. Brachet's own plan. We shall not therefore travel through it. Under the head of "treatment of predominant symptoms" (p. 692, et seq.) he advises in gastralgia and gastrodynia, the hydrochlorate of morphia, combined with datura stramonium; he also names, as useful, belladonna, the cyanuret of potassium, aconite, &c. If these and antispasmodics fail, vesicatories, the actual cautery briefly used, the moxa and caustics may be applied to the epigastrium. If there is pain in the intestines, cassia, manna, tamarinds, oil of sweet almonds, injections and baths, will be useful. In cardialgia, sedatives are to be combined with antispasmodics; the cyanic preparations with assafœtida, musk, &c. In cerebral pain, opiates cautiously used, valerian alone or combined, hot foot-baths, asarum in powder as a sternutatory, are to be had recourse to. In palpitations, the cyanic preparations are alleged by the author to hold "the first place," (p. 699,) and in his hands, digitalis combined with the hydrochlorate of morphia, has produced the most unexpected results. "In *insomnia*, to which hypochondriac patients are very subject, opium given internally, is to be avoided as much as possible on account of its constipating effects; but from plasters and ointments of the drug, the author has obtained good results. He also advises that the different tinctures of opium should be applied, in friction, to the head. Against *flatus* of the stomach and bowels, one of the most characteristic inconveniences of hypochondria, Brachet recommends absorbents, &c., as magnesia, magistery of bismuth, crabs'-eyes, lime-water, soap, &c. Where the flatus depends on an *atonic* state of the stomach, M. Brachet recommends rhubarb, cascarrilla, calumba, chamomile, cannella, anise, fennel, and even cinchona and chalybeates. In regard to constipation, an affection so frequent and troublesome with hypochondriasis, little is said.

The treatment of the *causes* of hypochondria, when these are appreciable, will, after what has been said, suggest itself to the reader. Into this point and the other particulars which we enumerated a few paragraphs back, the author enters, but in a very general and vague manner. Exercise, travel, recreation, occupation, and a certain degree of temporizing on the physician's part, are recommended. Attention to diet is of course strongly insisted on. In regard to prophylaxis, great care is suggested as necessary in regard to the habits, moral and physical, of youth, and exercise carried to *fatigue* is stated to be the physiological and safe way of forestalling, as it were, the operation of those passions, which at that early period often rage tempestuously, and the consequences of the unregulated operation of which are often experienced through the whole subsequent life.

We close this notice with the simple observation, that the work of M. Brachet must have obtained, in our opinion, the honour conferred on it by the French Royal Academy of Medicine, rather in consequence of the care and labour evinced in its production, than from any original merit to which it can lay claim. It must be allowed, however, to comprise a great amount of useful information on the subject it professes to treat.

II. Since the preceding pages were written, Dr. Michéa's 'Practical, Dogmatic, and Critical Treatise on Hypochondria' has been given to the public. This work, like the one we have just examined, was "crowned" by the French Royal Academy of Medicine. As the subject is the same, so the method and execution of Dr. Michéa's work are nearly identical with those of Brachet. Michéa's cases are, if we may so express ourselves, more picturesque; that is, many of them are extremely curious, both in a physical and in a metaphysical point of view. His "observations" (cases) amount to 81, and occupy fully one half of the volume. We shall give the "general reflections" (p. 262,) with which he sums up these cases.

"When one examines, not now in detail, but in a general view, the cases which we have given, we see that they include two groups of elements: symptoms which are constant and common" (to all cases,) "slight differences being excepted, and phenomena which are variable, existing in some cases and being absent in others. The symptoms constantly present are, the psychological disorder, the mental aberration; the varying characters are the functional alterations of the peripheric nervous system, and the lesions of tissue in the principal viscera." This distinction is important, for the order in which these two groups of symptoms appear, and their connexion can alone inform us whether hypochondria is an essential or a secondary affection, &c.

In Michéa's opinion, hypochondria is essentially *psychological* in its origin. We shall allow him to state the doctrine in his own words: (p. 369.)

"Now, in like manner, as religious monomaniacs which flow from the innate sentiment of deity (?) as *eroto-mania* which arises from the necessity of attachment proper to each sex; as the monomania of ambition, which is connected with the desire of elevation with which man is pursued, &c. &c.; so hypochondria connects itself very closely with a special faculty, with *the instinct of individual preservation*, the love of one's existence, the *biophilie* of Broussais . . . . . The exaggeration of the faculty of which we speak, may be acquired or original."

And he thus comments on M. Brachet's view of the nature of the disease:

"M. Brachet, who prefers the opinion of Louyer Villermay to that of Willis, of Sauvages, of Darwin, of Cabanis; who seeks to refute the metaphysical assertion, which we regard as the principle, the germ of the malady in question; M. Brachet is extremely embarrassed, when he wishes to explain why pain does not always react on the encephalon, on the imagination, in such a manner as to produce hypochondria. For if the fear of suffering plays such an important part, as he thinks it does, it ought necessarily to follow, that the more an individual experiences a lively and protracted physical pain, the more he is apt to contract hypochondria. . . . Also, not finding an explanation" [why such is not the case,] "neither in the diversity of the physical lesions peculiar to the nerves, nor in the peculiar character of the pain, M. Brachet is obliged to recognize a predisposition to hypochondria without specifying its nature; to see an enigma where none

exists for him who knows how to examine things in a suitable manner, that is to say, to survey the question under all its aspects, under its moral as well as under its physical point of view. To recapitulate; the principle of hypochondriacal monomania, its virtual condition, the element without which all the properly named causes would be insufficient, and of non-effect, is a certain *exaggeration of the instinct of self-preservation*, in other words, of the *love of life*.

"The exaggeration of the faculty in question, may be *acquired or original*."

The treatment recommended by M. Michéa is so practically similar to that advised by M. Brachet, and by preceding authors, and presents so few novelties worthy of remark, that we shall not trespass on the reader's time, by any minute details of it. He divides the treatment into that of idiopathic and that of secondary hypochondria. In the former, he employs principally hygienic or physiological means, such as exercise, travel, intellectual occupation, and the *contra-excitation*, if we may use the word, of various salutary and innocent moral emotions and attractions. In the latter, he has recourse, in addition to physiological means, to anti-spasmodics, tonics, antiphlogistic, diaphoretic treatment. M. Michéa's work is well worthy of perusal by the English reader.

#### ART. VIII.

1. *Odontography; or a Treatise on the Comparative Anatomy of the Teeth; their Physiological Relations, Mode of Development, and Microscopic Structure, in the Vertebrate Animals.* By RICHARD OWEN, F.R.S. Correspondent of the Royal Academy of Sciences in Paris, Berlin, &c. &c., Hunterian Professor to the Royal College of Surgeons, London.—London, 1840-45. Royal 8vo, pp. 656. With 168 Plates.
2. *Report on the Microscopic Structure of Shells.* Part I. By WILLIAM B. CARPENTER, M.D. F.R.S., Fullerian Professor of Physiology in the Royal Institution of Great Britain. (*From the Report of the British Association for the Advancement of Science for 1844.*) 8vo, pp. 24. With 20 Plates.
3. *Observations on the Structure of the Shells of Molluscous and Conchiferous Animals.* By JOHN SCOTT BOWERBANK, F.R.S. &c. (*From the Transactions of the Microscopical Society*, Vol. I.)—London, 1844. Royal 8vo, pp. 34. With 5 Plates.

THE completion of the truly splendid work at the head of our list, of which the First Part was noticed by us at the time of its publication (vol. X, p. 208), gives us the opportunity we have long wished, of bringing under the notice of our readers, in some detail, the highly-interesting results of the laborious researches in which Prof. Owen has been so long engaged; researches whose actual merit can only be estimated by those who have penetrated somewhat deeply into the mysteries of anatomical science; but whose general results can be made appreciable by those who are obliged to content themselves with a more superficial glance. It is to this latter class that we now address ourselves. *Non cuius contigit adire Corinthum*. Those who are seeking their daily bread amid the toils of a laborious profession, can scarcely be expected to master the details of an investigation like the present; yet we would fain hope that their youthful

aspirations are not so completely quenched, as to lead them to look without interest upon its general results, especially upon such as have a direct bearing upon long-disputed questions of physiological science, or open a new field for speculation and research. To those who make the study of anatomy their main object, we say most unhesitatingly,—do not be satisfied with our sketch, but acquire the work itself,—and having acquired it, master its general principles, familiarize yourselves with the beautiful delineations which accompany it; and then, if you do not follow the author through all the minutiae of generic descriptions, whose chief value must be to the zoologist and palæontologist, we are confident that you will experience a rich treat in accompanying him from class to class, and from order to order, and in witnessing the marvellous exactitude of the indications of affinity or diversity between the several groups, which are so frequently afforded in the single characters presented by the intimate structure of their teeth. We think, too, that the scientific public owes a debt of gratitude to the enterprising publisher, without whose aid this truly national work might never have made its appearance, at least in its present form; and we trust that, having now arrived at its completion, its sale may be such as at least to remunerate him for his large outlay.

Like too many other treatises published in Parts, Prof. Owen's *Odontography* has not fulfilled the promises made at its commencement; and we deem it right to allude to the circumstance, that we may not appear to exercise any partiality, by holding up certain offenders to reprobation, and letting others pass scot free. The facts of the case are these. The First Part was published in April 1840, with the following announcement: "This work will appear in Three Parts, and will be illustrated by upwards of 150 plates, to be completed in the course of the present year." The Second Part did not appear until May 1841; and the Third was then announced for 1842. Three years more passed away, however, before its appearance; the date of its publication being June 1845. It is but fair, however, to Prof. Owen that we should add, that we believe him to have more excuse for this delay than most other similar transgressors. In the first place, the work is entirely original; scarcely a single fact could be stated on the authority of another: and his personal labour was required to complete every portion of it. Further, the duties of his situation occupy a large part of his time, and these are liable to be frequently increased by unexpected occurrences. Thus since the appearance of the First Part in 1840, Prof. Owen has been called upon to prepare not merely four quarto volumes of catalogues of the Hunterian Museum, but monographs of those two extraordinary animals, the *Mylodon* and the *Dinornis*; and he has been in a manner compelled by the British Association, to undertake the laborious duty of drawing up reports on the British fossil mammalia and reptiles. Besides these works, which would seem to us quite enough for any half dozen other men, he has superintended the publication of his Hunterian Course of Lectures on the Invertebrate Animals; and has contributed not a little to the valuable Sanitary Reports of the Health of Town Commission, of which he was a *working* member. Hence we cannot but look at his default, in regard to time, with a lenient eye; more particularly as the parts of the work first published have not *grown old* in the interval, which is too frequently the case in similar circumstances. In fact, Prof.

Owen had so nearly exhausted the subject of the teeth of fishes and reptiles in his two former parts, that scarcely anything has been added by subsequent inquirers; and they are consequently as much up to the mark, as if they were published yesterday. The *present* buyers of the treatise, therefore, have no ground for complaint; and those who purchased the Parts as they appeared, had the satisfaction of possessing a work complete in itself, so far as it had extended.

Of the two pamphlets whose titles we have given above, the first embraces the commencement of an inquiry, suggested by the success of Prof. Owen's researches, into the *comparative structure* of the shells of mollusca, &c.; whilst the second contains the results of some valuable researches into the *origin and formation* of shell. We think that our readers may be interested in a brief notice of these inquiries, as a pendant to the account of Prof. Owen's labours, with which we shall now proceed.

Having given in our Eighth Volume (p. 158) a condensed summary of the history of Odontology up to the year 1839, we shall not again traverse this ground; but shall content ourselves with remarking that, notwithstanding the rapid extension of our knowledge of the *structure* of teeth, and the glimpses which had been at that time perceived, of the zoological importance of the *varieties* of structure which presented themselves in different classes, nothing positive was known in regard to the most important point in the development of teeth,—namely, the *origin and mode of formation* of the Dentine or Ivory. By most anatomists of recent times, as is well known, this substance was regarded as an *excretion* from the surface of the pulp; and although it had been not unfrequently spoken of by others, especially of older date, as the *ossified pulp*, no satisfactory demonstration of the *conversion* of the cells of the pulp into the solid but tubular ivory had been made public at that period. The first clear indication of a return to the more ancient doctrine, that “the dentine is the ossified pulp,” is to be found in the ‘*Mikroskopische Untersuchungen*’ of Schwann, published in 1839; but he evidently felt much difficulty on the subject, in consequence of his unfortunate selection of subjects for examination. After a careful examination of the history of the controversy which took place in 1840, between Prof. Owen and Mr. Nasmyth, we have no hesitation in giving it as our decided opinion, that Prof. Owen was the first to describe unequivocally and demonstratively the history of the conversion of the pulp into ivory;—this description being contained in his memoir presented to the French Academy in December 1839, of which the general results were immediately published in the ‘*Comptes Rendus*.’ To these observations we shall presently revert; but our first duty will be to put our readers in possession of the chief elementary forms of dental structure, which Prof. Owen has encountered in the extended examination, whose details are contained in the work before us, and a general account of which is embodied in its Introduction.

The *first* and most important of these elementary structures, is that which has been usually denominated ivory, but to which Professor Owen has given the more appropriate designation of *Dentine*. Many teeth are altogether made up of it; and there are none in which it is wanting. In what may be regarded as its *typical* condition,—that in which it appears to attain its highest development, and departs most widely from other

structures,—it is *unvascular*; and it then consists of a substance, which ordinarily appears homogeneous or nearly so, and which is traversed by numerous minute tubuli, running nearly parallel to each other. Where the dentine is unvascular, these tubuli run for the most part in an uniform direction; radiating from the central pulp-cavity towards the surface of the tooth. In this course, the tubes describe two, three, or more curvatures, appreciable by a low magnifying power; these are termed by Prof. Owen the “primary curvatures.” With a higher power, the tubes are seen to be bent throughout the whole of their flexuous course, into minute and equal oblique undulations or gyrations, of which Retzius counted 200 within the space of 1-10th of an inch; these are termed by Prof. Owen “secondary curvatures” or gyrations. Both the primary and secondary curvatures of one tube are usually parallel with those of the contiguous tubes; and from the radiated course of these tubes, they occasion the appearance of lines running parallel with the external contour of a tooth; for when the surface of a longitudinal section is viewed with the naked eye, the light is differently reflected from the different parts of the oblique secondary curves of the tube on which it falls; but the curves being parallel to each other, and to the superficial contour of the section, they appear like the cut edges of a series of parallel and super-imposed lamellæ. The main calcigerous tubes very frequently send off ramuli, which anastomose with each other; and the intertubular substance is often seen to contain cells or cavities, with which these branches communicate. In many teeth, moreover, and especially in the tusks of the elephant, these intertubular cells (which may be regarded as dilatations of the ramuli just noticed) are disposed in lines which are parallel to the coronal contour of the tooth; hence another cause of the appearance of concentric lamellæ, and of the actual decomposition of such teeth into super-imposed lamelliform cones,—facts which have been adduced in support of the “excretion-theory” of the formation of dentine.

There is another form of dentine, however, which is intermediate in its structure between the preceding and true bone; this, which is called by Prof. Owen *vascular dentine*, is characterized by the prolongation or persistence of cylindrical canals of the pulp-cavity, in the dentinal tissue. In mammals and reptiles, these canals, which are evidently analogous to the Haversian canals of bone, are straight and more or less parallel with each other; they bifurcate, though rarely; and when they anastomose, as in the *Megatherium*, it is by a loop at or near the vascular dentine. Under this form, the vascular dentine is the principal constituent of the teeth of the sloth tribe. It is in the teeth of fishes that we find this structure most abundant, and presenting its most characteristic forms; the distinction between the dentinal and osseous tissues being through its intermediation gradually effaced. We there find the medullary canals of the vascular dentine, though in some instances straight and parallel and sparingly divided or united, yet in general more or less bent, frequently and successively branched, and the subdivisions blended together in so many parts of the tooth, as to form a rich reticulation. The calcigerous tubes sent off from the interspaces of the network, partake of the irregular character of the canals from which they spring, and fill the meshes with a moss-like plexus. Not unfrequently the medullary canals of the tooth are directly



continuous with the Haversian canals of the bone on which it is implanted—thus demonstrating the relation between them; and there is then no central pulp-cavity.

Another modification of dentine, analogous to the preceding in its vascular character, but differing from it in the presence of radiated cells, is found in the interior of the teeth of certain reptiles, as the *Iguanodon*, *Hylæosaurus*, and *Ichthyosaurus*, and of those of a few of the mammals, as the *Cachalot*. It has been uniformly described by the authors who have observed it, as Cuvier and Conybeare, as the result of the ossification of the residue of the pulp; which usually remains soft, but which is here calcified, rendering the centre of the tooth solid. In this account, they were not far wrong; for the tissue in question approaches, in the combined presence of medullary canals and calcigerous cells, as closely to that of the skeleton of the species in which it occurs, as the reticulate modification of the vascular dentine in the teeth of fishes does to the osseous tissue of their skeleton.

The second primary element of tooth-structure is the *cementum*, formerly called "*crusta petrosa*," which corresponds in all essential particulars with bone; possessing its radiated cells in a highly characteristic form; and being also traversed by vascular canals, wherever it occurs of sufficient thickness, as in the teeth of Ruminants. This structure was first determined by Purkinjé; and he discovered it, not merely in the compound teeth of the horse and ruminant animals, but also in the simple teeth of man and the carnivora, where it forms a layer investing the fang of the tooth, and increasing in thickness as it approaches the apex of the fang. Purkinjé also observed in one instance, that this bone-like substance was continued over the enamel of the crown of a human incisor. Prof. Owen has confirmed this fact, as regards the human teeth and the simple teeth of many mammals and reptiles; the layer of coronal cement varies in thickness, being of extreme tenuity in the teeth of man and the quadrupeds. The difference between the simple and compound teeth is thus proved to depend, not, as formerly supposed, on the presence of a third additional substance in the latter, but on its greater abundance and different disposition in the tooth:

"It is the presence of this osseous substance, which renders intelligible many well-known experiments of which the human teeth have been the subjects; such as their transplantation and adhesion into the combs of cocks, and the establishment of a vascular connexion between the tooth and comb; the appearances which the Hunterian specimens of these experiments present, and of the reality of which Prof. Müller satisfied himself during his visit to London, are no longer perplexing, now that we know that the surface of the tooth, in contact with and adhering to the vascular comb, is composed of a well-organized tissue, closely resembling bone.

"This correspondence of the cement, which, when it exists in sufficient quantity, becomes almost identity, with true bone, is illustrated by the varieties of microscopic structure which the cement presents in different classes of animals, and which always correspond with the modifications of the osseous tissue of the skeleton in those animals; thus the cement in the osseous fishes, in which the bone is not characterized by the radiated calcigerous cells, likewise ceases to present that character; and in reptiles and mammals, in which the radiated cells are present in the bone of the skeleton and in the dental cement, there is a close conformity as to their size and shape in both tissues.

"The most remarkable modification of mammalian cement is presented by the thick layer of that substance which invests the molars of the extinct megatherium; besides abounding in calcigerous cells, it is here traversed by straight, parallel, and occasionally bifurcated medullary canals, arranged with regular intervals, and directed from the exterior of the tooth somewhat obliquely to the surface of the unvascular dentine, close to which they anastomose by loops, corresponding with, and opposite to, those formed by the medullary canals of the vascular dentine of the same tooth." (Introduction, p. xxi.)

Under every modification, the cementum is the most highly organized and most vascular of the dental tissues; and its chief use is to form the bond of vital union, between the denser and commonly unvascular constituents of the tooth, and the bone in which the tooth is implanted. In the herbivorous mammalia, it not only invests the exterior of the teeth, but penetrates their substance in vertical folds, which vary in number, form, extent, thickness, and degree of complexity; and these contribute to maintain that inequality of the grinding surface of the tooth, which is so essential to its function as an instrument for the comminution of vegetable substances. A similar structure has been found by Prof. Owen in the teeth of a few reptiles now extinct.

We now come to the *third* and last of the primary elements of tooth-structure; namely, the enamel. This is the least constant of the dental tissues; it is more frequently absent than present in the teeth of the class of fishes; it is wanting in the entire order Ophidia among reptiles; and it forms no part of the teeth of the Edentata and many Cetacea among mammals. Moreover its structure is by no means constant, even where its presence is evident. Like dentine, it presents several shades of variety. Its highest or most specialized condition is presented in the class mammalia; whilst in fishes it frequently approaches so closely to dentine in its microscopical and chemical characters. We shall first describe its most distinctive form, such as it presents in mammals. The enamel of the molar tooth of a calf, which has just begun to appear above the gum, and which can readily be detached from the dentine (especially near the commencement of the fangs), is resolvable into apparently fine prismatic fibres; if these fibres be separately treated with dilute muriatic acid, and the residue examined, with a moderate magnifying power, in distilled water, or, better in dilute alcohol, portions of more or less perfect membranous sheaths or tubes will be discerned, which inclosed the earthy matter of the minute prism, and served as the mould in which it was deposited. When, however, the enamel is examined in a tooth that has been completely formed and in use, the small proportion of animal matter which then remains does not yield any indication of its primitive organic structure; and the only information it will then afford is derived from the microscopic examination of sections and fractured surfaces. It is then ascertainable, that the layer of enamel consists of an assemblage of prismatic fibres closely impacted together, their form being more or less regularly hexagonal; they are directed nearly at right angles to the surface of the dentine; and their central or inner extremities rest in slight but regular depressions on the periphery of the coronal dentine, whilst their free extremities form the surface of the enamel. By examining the latter with reflected light, under a linear power of 300, they are seen to present very much the appearance

of the face of a honeycomb. In the human tooth, the fibres which constitute the masticating surface are perpendicular or nearly so to that surface; while those at the lower part of the crown are transverse to the axis of the tooth, and consequently have a position best adapted for resisting the pressure of the contiguous teeth. The strength of the enamel-fibres is further increased by the graceful wavy curves in which they are disposed; these curves are in some places parallel, in others opposed; their concavities are commonly turned to each other, where the shorter fibres, which do not reach the exterior of the enamel, rest by their gradually-attenuated peripheral extremities upon the longer fibres. Other shorter enamel-fibres extend from the outer surface of the enamel towards the dentine, and are wedged into the interspaces of the longer fibres. When the enamel-fibres are examined with a high magnifying power, they are seen to be marked with a series of minute and closely-set transverse striæ, along the whole or a part of their length; this appearance is wanting, however, in the enamel of *fossil* mammalian teeth; or at least in those specimens examined by Prof. Owen. He does not here attempt to give any explanation of them, but contents himself with confirming the remark of Retzius, that they probably belong to the capsule and not to the enamel-fibre; we shall have occasion to notice them again, when speaking of the development of the enamel. All his researches confirm the statement of Schwann, in regard at least to the enamel of mammalian teeth, that it consists of a layer of prismatic *cells* in close apposition with each other; the extremities of which constitute the free and attached surfaces of the enamel, whilst their length corresponds for the most part with the thickness of the layer. We shall hereafter see that Dr. Carpenter and Mr. Bowerbank have discovered a structure in certain shells, which exactly coincides with this form of enamel, even to the presence of the transverse striæ; but which is on so much larger a scale, that the prisms, which in the enamel of the horse are about 1-5600th of an inch in diameter, are sometimes as much as 1-100th of an inch across.

This condition of the enamel, like the corresponding one of the mammalian dentine, whilst it distinguishes that tissue from the true osseous texture, and perfects it for its mechanical application, at the same time removes it from the influence of the conservative and reparative powers of the living organism. When once formed and exposed, the mammalian enamel is less able than the other structures to offer any resistance, by its vital endowments, to the influence of the external decomposing forces; but this inferiority is amply compensated by its superior mechanical endowments. Containing not more than 2 or 3 per cent. of organic matter, and having the calcareous elements so disposed as to possess the greatest cohesion, the enamel is by far the firmest and most durable of the dental structures: and accordingly we find it disposed in situations where it may offer the most advantageous resistance. In most simple teeth, it is limited to the "crown" of the tooth, where it caps over the dentine. It sometimes, however, forms only a partial investment to the crown; as in the molar teeth of the *Iguanodon*, the canine teeth of the hog and hippopotamus, and the incisors of the *Rodentia*. In these, the enamel is placed only on the front of the tooth, but is continued along a great part of the inserted base, which is never contracted into one, or divided into more fangs; so that the cha-

acter of the crown of the tooth is maintained throughout its extent, as regards both its shape and structure. The partial application of the enamel in these "*dentescapularii*" operates in maintaining a sharp edge upon the exposed and worn end of the tooth, precisely as the hard steel keeps up the outward cutting edge of the chisel, by being welded against an inner plate of softer iron. In the herbivorous mammalia, with the exception of the *Edentata*, vertical folds or processes of the enamel are continued into the substance of the tooth; varying in number, form, extent, and direction; and producing, by their superior density and resistance, the ridged inequalities of the grinding surface, on which its efficacy in the trituration of vegetable substances depends.

In fishes, however, the enamel frequently bears so close a resemblance to the dentine, as scarcely to be distinguishable from it. The fine calcigerous tubes are present in both substances, and undergo similar subdivisions; the directions only of the trunks and branches being reversed, in conformity with the contrary course of their respective developments,—the matrix of the enamel being internal, whilst that of the dentine is external. The proportion of animal matter is also greater in the teeth of fishes, than it is in that of higher vertebrata; and the proportion of the calcareous salts incorporated with the animal constituents in the walls of the tubes, is greater as compared with the sub-crystalline part deposited in the tubular cavities. In reptiles, the proportion of the hardening salts, and consequently the density of the enamel, are increased; but the course, size, and ramification of the calcigerous tubes still bear considerable analogy to those of the dentine; whilst the prismatic form of the enamel-cells, and their minute striations, which constitute the characteristic features of the enamel in the mammalian class, are not present in that tissue in the cold-blooded vertebrata.

It has long been recognized as a general law, that the higher an animal is placed in the scale of organization, the more distinct and characteristic are not only the various organs of the body, but the different tissues which enter into their composition. We have now seen how well that law is exemplified in the teeth; although in the comparison of these organs we are necessarily limited to the range of a single primary group of animals. We have seen, for example, that the dentine is scarcely distinguishable from the tissue of the skeleton in the majority of fishes; but that its peculiarly dense, unvascular, and resisting structure, which is the exceptional condition in fishes, is its prevalent character in the teeth of the higher vertebrata. And the enamel, whose characters in mammalia are so peculiar, sinks, in fishes, into a condition in which it can hardly be called a special form of tooth-structure.

We now pass on to consider the development of the teeth, to which John Hunter was the first to direct particular attention. It was by him that three different parts of the matrix were first distinguished, as destined for the production of three different kinds of primary tissue now described; the several parts of this matrix—termed by Prof. Owen respectively the "dental pulp," the "enamel pulp," and the "capsule" or "cemental pulp"—being first distinctly indicated in the '*Natural History of the Human Teeth*.' But no definite account was given by Hunter, either of the part which each formative organ plays in the development of its corre-

sponding tissue, or of the development of the matrix itself. The latter subject has been chiefly elucidated by the observations of Arnold, Purkinje and Raschkow, Valentin, and Goodsir, of which we gave some account in our former article (vol. VIII, p. 165 et seq.;) but as we were at the same time obliged to point-out the important discrepancies existing between their statements, we shall here introduce a notice of the results of Prof. Owen's more extended researches, which, as will be seen, bear a close correspondence with those of Mr. Goodsir.

"The dentinal pulp is always the first developed part of the matrix, and makes its appearance in the form of a papilla, budding out from the free surface of a fold or groove of the mucous membrane of the mouth, and generally of that which covers the inner side of the jaws or their rudiments. In certain fishes, as the shark, the tooth is completed without the development of the matrix proceeding beyond this 'papillary' stage.

"The first papilla may be distinctly recognized in the maxillary mucous groove of a human embryo, one inch in length; the others quickly follow. By the growth of the contiguous mucous membrane, the papilla appears to sink into a follicle; and by the development of three or four lamellar processes from opposite sides of the mouth of the follicle, and their mutual cohesion, the papilla is inclosed in a capsule; this 'capsular' stage of development is completed in the human fetus at the fifteenth week. The capsule is the part of the matrix destined for the development of the cement. In many fishes and in serpents, the teeth are completed without the development of the matrix proceeding beyond this stage.

"In those teeth which are defended by enamel, a pulp destined for its production is developed from the inner surface of the capsule, opposite to that which the dentinal pulp is attached. In the human subject, the 'enamel pulp' makes its appearance as a soft gelatinous substance adhering to the opercular plates closing the capsule, and the adjoining inner surface of the capsule, at the sixteenth week; the surface of adherence of the 'enamel pulp' is progressively extended until it is separated by a mere linear interspace from the base of the 'dentinal pulp.' Whatever eminence or cavities the one has (says John Hunter,) the other has the same, but reversed; so that they are moulded exactly to each other." (Introduction, p. xxix.)

In regard to the formation of the dentine from the dentinal pulp, it is well known that two distinct views have been entertained. One of these, which may be termed the "excretion-theory," is generally regarded by physiologists as having had Hunter for its parent; although he does not express himself very clearly on the subject. This theory supposes that the pulp stands to the tooth-bone in the relation of a gland to its secretion; that the formative virtue of the pulp resides in its surface only; that the dentine is deposited upon and by the formative or secretive surface of the pulp, in successive layers; and that the pulp, exhausted, as it were, by its secretive activity, diminishes in size as the formation of the tooth proceeds,—except in certain species, in which the pulp is persistent, and maintains an equable secretion of dentine throughout the life-time of the animal. This opinion regarding the formation of dentine was most clearly set forth by Cuvier; who regarded himself as confirming, in this particular, the views of Hunter.

The other theory,—which now indeed can scarcely be any longer termed such, since it is an established fact,—has been known as the "conversion-theory." On this view, the cells of the pulp are actually converted, by a series of metamorphoses hereafter to be explained, into the tubular dentine; which is therefore to be regarded, not as a new formation from the

surface of the pulp, but as neither more nor less than the calcified pulp itself; hence those cases, in which the formation of new dentine is continually going on at the base of the tooth, are to be regarded as simply examples of the continued growth and metamorphosis of the pulp, which processes are elsewhere limited. It is to Purkinjé and Raschkow that we owe the earliest advance towards this discovery; these observers having been the first, it would appear, to submit to careful microscopic examination the structure of the pulp prior to the formation of the dentine, and to endeavour to trace the changes which it undergoes during that process. As we have noticed their researches, and those subsequently made by Schwann, on two former occasions (vol. VIII, p. 166, and vol. IX, p. 514,) we shall here only give Prof. Owen's summary of their results, which we believe to be perfectly correct.

"The main facts, then, which may be considered as established by the researches of Purkinjé and Schwann, relative to the formation of dentine and the changes which the dentinal pulp undergoes during the process, are the following. The proper tissue of the pulp consists of minute nucleated cells with capillary vessels and nerves, invested by a dense structureless membrane (*membrana preformativa*), which disappears during the formation of the dentine. The superficial pulp-cells assume an elongated form; they correspond in diameter and direction with the tubes of the contiguous cap of dentine. These or similar cells are observed, in a state of transition into dentine, in the interspaces between the pulp and the previously-formed cap of dentine; they adhere to the latter when it is displaced from the pulp." (Introduction, p. xxxviii.)

The chief points that remained to be determined were the relation of the dentinal pulp to the transitional cells between it and the dentine; the nature of the transition; and the relation of the cells to the dentinal tubes and the intertubular tissue. By Purkinjé and Raschkow it appears still to have been thought, that the pulp supplied the material only for the production of dentine; and that this was deposited in successive strata between its surface and the preformative membrane. On the other hand, Schwann evidently leaned to the ancient doctrine that the dentine is the ossified pulp; but the nature of the subjects selected by him for his observations, and also by Mr. Nasmith who early followed in the same track, was not favorable for the detection of the real character of the process, for reasons thus stated by Prof. Owen:

"The shape of the teeth of the mammalia selected by them for examination, will not yield a view of the cap of new-formed ivory and the subjacent pulp, in undisturbed connexion, by transmitted light, with the requisite magnifying power; and if placed under the microscope as an opaque object, the light is reflected from the cap of ivory, and displays only the characters of its surface, and not its relations to the surface of the pulp in contact with it. To examine this surface microscopically, either in a human tooth, or in that of any of our domestic quadrupeds, the cap of dentine must be removed; and the exposed surface of the pulp, and the corresponding surface of the dentine, must be examined as opaque objects by reflected light. Or, if the layer of the dentine be then enough to allow the transmission of sufficient light, it must be removed from the subjacent pulp before it can be so examined. It is, therefore, obvious that any inference as to the structure of the pulp's surface, or the nature of its previous connexion with the transitional cells and the superincumbent layers of dentine, which may be founded on appearances observed under the circumstances above mentioned, is liable to the objection that the natural relations of the parts observed have been destroyed. If the den-

tine be the ossified pulp, as Dr. Schwann was disposed to believe, then the calcified part of the growing tooth has been violently displaced from the uncalcified part; and the part of the pulp which thus presents itself is a lacerated and not a natural surface.

"But to the observer who regarded the dentine as a secretion from the pulp's surface, every modification which he might detect on the surface after the displacement of the dentine, would appear natural, and perhaps be described as such with the view to the elucidation of the secreting process. Thus the cells which might be observed in progress of ossific transition into dentine, would appear as independent parts, and the products of a secreting property; their detached condition being, all the while, a necessary result of the artificial displacement of the new formed cap of ivory, and the consequent laceration of the pulp's surface. In the terms of the 'excretion-theory' the exposed surface of the pulp over which the cells lie scattered is a 'formative surface;' the nucleated cells are naturally 'detached,' and the ivory or dentine resulting from their calcification and metamorphosis is, in respect to the pulp, 'altogether a distinct formation, and by no means an ossification of the pulp.'" (Introduction, p. xl.)

That such were, in fact, the deductions of an acute observer, from researches analogous to those of Purkinjé and Schwann, makes it evident that the doctrine of "conversion," to which the latter manifested a leaning, could not be regarded as by any means established, whatever amount of *a priori* probability it might be considered as possessing. The first *demonstration* of the organic continuity of the cap of dentine with the supporting vascular pulp, was afforded to Prof. Owen by the examination of the thin, lamelliform, transparent teeth of a foetal shark; in which the various stages of the conversion of the pulp into dentine could be observed, without any disturbance of their natural relations,—a condition evidently of the greatest importance. By his observations on this fortunate *subject*, Prof. Owen was able to attain that clear idea of the nature of the development of dentine, which is expressed in his 'Theory of identification by centripetal calcification of the pulp's substance,' submitted to the French Academy, in December 1839. Of the truth of this theory, he has since obtained evidence from widely different sources; and we cannot doubt that it is in the main correct, although some of the details may possibly require slight modification, as our knowledge of the general history of cell-growth and metamorphosis becomes more precise. We shall, therefore, endeavour to put our readers in possession of it, by an abridgment of Prof. Owen's descriptions;—premiating, however, that we cannot make them as intelligible as we could wish, without the aid of figures.

The essential character of each of the three formative organs already noticed, is *cellular*; but the cells differ in each organ, and derive their specific characters from the properties and metamorphoses of their *nucleus*; upon which the specific microscopical characters of the resulting calcified substances depend. In the cells of the "dental pulp," the nucleus fills the parent-cell with a progeny of nucleoli, before the work of calcification begins. In the "enamel-pulp," the nucleus of the cell disappears, like the cytotblast of the embryo-plant in the formation of most vegetable tissues. And in the cells of the "capsule" or "cemental pulp," the nucleus neither perishes nor propagates, but retains its individuality, and gives origin to the most characteristic feature of the cement, viz.—the radiated cell.

The dental pulp, at the commencement of the calcifying process, consists of a mass of nucleated cells, imbedded in and supported by a homo-

geneous, minutely sub-granular, mucilaginous substance, the "blastema;" and through this is distributed a network of capillary blood-vessels, originating from the base of the papilla, together with a plexus of nerves. The capillaries present a sub-parallel or slightly-diverging pencillate arrangement during their progress through the substance of the pulp; but they preserve their looped and reticulate termination near its apex. The accompanying nerves terminate in loops. The cells, which are smallest at the base of the pulp, and have large simple sub-granular nuclei, soon fall into linear series directed towards the periphery of the pulp; and where the cells are in close proximity with that periphery, they become more closely aggregated, increase in size, and present a series of important changes in their interior. A pellucid point appears in the centre of the nucleus, which increases in size, and becomes more opaque around it. A division of the nucleus in the course of its long axis is next observed. In the larger and more elongated cells, still nearer the periphery of the pulp, a further subdivision of the nuclei is observed, in a transverse as well as in a longitudinal direction; and the subdivisions become elongated, with their long axes vertical, or nearly so, to the plane of the pulp and to the field of calcification. At this stage, Prof. Owen's figure represents each cell as possessing several distinct nuclei, arranged in rows; these being formed by the longitudinal and transverse division of the original single nucleus; and the rows pointing from the centre towards the periphery of the pulp. The subdivided and elongated nuclei become attached by their extremities to the corresponding nuclei of the cells in advance; and the attached extremities become confluent; so that lines or files of nuclear matter are formed, which present an unbroken continuity from one cell to another.

While these changes are proceeding, the calcareous salts of the surrounding plasma begin to be accumulated in the interior of the cells, and to be aggregated in a semi-transparent state about the central granular part of the elongated nuclei, which now present the character of rows of minute secondary cells; and the salts occupy, in a still clearer and more compact state, the interspaces of such cells. The rows of secondary cells remain uncalcified in the midst of the solid calcareous deposit, and thus constitute the *tubuli* of the dentine; in which a granular or moniliform aspect may generally be traced; and in which, too, it would appear that some scattered deposit of calcareous matter takes place. Around the tubes, in a transverse section, is a small circular space, manifestly distinct from the intertubular substance; and this is regarded by Prof. Owen as the indication of the membrane surrounding the elongated and coalesced nucleoli or secondary cells. The indications of the primitive boundary or proper parietes of the parent cell are commonly lost; but they are sometimes very distinctly preserved, especially in certain species of the mammalian class. They are figured by Prof. Owen in the molar of the *Myiodon*, in the incisive tusk of the *Dugong*, in the premolar and canine of the *Pteropus*, in the incisor of the Chimpanzee and of Man, and in the molar of a *Rhinoceros*. Of the correctness of some of these delineations, we have been able to satisfy ourselves by personal observation; and we cannot hesitate, therefore, in ascribing to Prof. Owen the merit of first detecting, in the completely-formed dentine, the original cells of the pulp. When a layer of the calci-



fied cells is carefully detached, the exposed uncalcified surface of the pulp presents the appearance of a network; the meshes being formed by the exposed cells, and the intervening very thin layer of blastema. Each mesh shows, by well-directed light under a high power, several points, each of which is the centre of one of the meshes of a finer network; and these points are the ends of the granular elongated nuclei, which have been torn from the cavities of the dentinal tubes in the displaced cap of dentine. The adhesion of the primary cells appears to be greater longitudinally than laterally, so as to give a tendency to that fibrous appearance, which the fractured surface of dentine usually presents; and this adhesion is strengthened by the continuity of the secondary cells or elongated nuclei. These usually uniting with each other at obtuse angles, and not in a perfectly straight line, form the "secondary gyrations or curvatures" of the tubuli. The primary curves depend upon the arrangement of the primary linear series of parent-cells.

Hence we are to regard the dentine as composed of the cells of the pulp, which have become consolidated by the deposition of calcareous matter, and which have coalesced, more or less completely,—generally even to the entire obliteration of the original partitions; the tubuli of the dentine are formed by a series of metamorphoses from the nuclei of those cells; whilst the intertubular substance is the result of the secretion that fills up the cavity of the parent cell, saving in those portions which are occupied by the tubuli. In some animals, as already stated, it is not uncommon to find minute cells, in this intertubular substance, communicating with the ramuli of the tubes, of which indeed they may be considered as dilatations; these cells, to which attention has been particularly directed by Mr. Nasmyth, are probably to be regarded in the light of secondary cells, having their origin as offsets from the linearly-arranged nuclei of the primary, but more fully developed than are those which by their coalescence form the tubuli.

As the pulp becomes calcified from its exterior towards its interior, it progressively decreases; fewer nuclei are developed in the cells, and these do not acquire so large a size. The diminution in both respects proceeds unequally, however, in the cells of the same stratum. Here and there, the linear tract formed by the nuclear matter, in a part of a smaller calcifying cell containing fewer nuclei, may be observed to unite with the converging extremities of *two* residuary tracts, or areas of dentinal tubes, of a calcified cell in advance. It is thus that the *bifurcation* of the tubes is produced; and a repetition of this confluence, which becomes more frequent as the calcifying process approximates the centre and base of the pulp, gives rise to the dichotomous divisions of the main tubes. In some of the cells at and near the central and basal part of the pulp, the nucleus has undergone no division; but has become merely elongated, and sometimes angular or radiated. In others it has altogether disappeared. This altered mode of action or change in the nuclei of the smaller central cells of the pulp, is the first and essential step in that modification of the dentinal tissue, which produces the substances termed by Prof. Owen "*osteo-dentine*" and "*vaso-dentine*." In the former, many of the cells retain their nucleus undivided, and the hardening salts are impacted around it in the interior of the cell; and the more or less radiated or stellate form, which

the nucleus acquires by the prolongations it sends forth, produces a certain resemblance to bone. In the production of "vaso-dentine," many of the cells lose their nucleus, which seems to have become dissolved. In both the latter modifications of dental tissue, the blood-vessels remain, and establish the wide tubular tracts in the calcified substance, to which the name of vascular canals is given. In true, hard, or unvascular dentine, no trace of the blood-vessels remains; and any changes which it undergoes, subsequently to the process of calcification, must be the result of the endowments of its component cells, and of the rows of nucleoli or partially-developed secondary cells, which fill the dentinal tubes. It will naturally be asked how, upon the "conversion-theory," the withdrawal (so to speak) of the capillary blood-vessels from the vascular pulp takes place, during the process of calcification? About this, however, no real difficulty exists; for it is just as easy for the capillary loops to retreat, as it was for them to advance in the first instance; and a similar process takes place in several other cases. Prof. Owen describes the extremities of the capillaries, at the part where calcification has commenced, as being in a state of congestion, and crowded with blood-discs, which are pressed together into polyhedrons, and are apparently stagnated and left out of the current of the circulation. These blood-discs are evidently in a state of metamorphosis, the degree of which varies according to their proximity to the calcified dentine; those nearest to it being distinguished by their mulberry form, due to the development of contained granules, by an increase of size, by a change from the circular to the elliptical form, and by a gradual loss of the characteristic colour, which is longest retained by the central granular matter. The tunics of the capillary vessel, containing these altered blood-discs, become gradually attenuated, and disappear as if dissolved, before reaching the field of conversion; and (although we are not so informed by Prof. Owen) we presume that the same change happens to these corpuscles, whose office it probably is to select and assimilate the materials which are to be employed in the process of calcification,—like the labourer who mixes and tempers the mortar, which is to be employed by the mason in his constructive operations. "The open mouths of the central last-formed ends of the calcified dentinal tubes," says Prof. Owen, "are always ready to receive the plasma transuded from the capillaries remaining in the uncalcified portion of the pulp, or in those tracts of it which constitute the vascular canals;" or, we would add, to take up the nutrient material supplied by the liquefaction of the assimilative cells just described.

It will be obvious from the preceding detail, how great is the importance of the *nucleus* of the cell, in its subsequent transformations; and here Prof. Owen's observations fully coincide with those, to which we have recently drawn the attention of our readers in other quarters.

We next proceed to consider the production of the enamel; the matrix of which differs from the dentinal pulp at its first formation, by the more fluid state of its blastema, and by the fewer and more minute cells which it contains. The source of this fluid blastema appears to be the free inner vascular surface of the capsule; in fact, we have been in the habit of regarding the cells of the enamel-pulp as constituting the epithelium that we should expect to find lining the mucous follicle. When thus viewed, the enamel bears a remarkable correspondence, in character as well as in struc-

ture, with the shell-substance hereafter to be described. As the enamel-blastema approaches the dentinal pulp, it acquires more consistence by an increased number of its granules; and it contains more numerous and larger cells, many of which show a nuclear spot, some even a nucleolus. These cells, which were at first spherical, become more closely impacted in the portion of the enamel-pulp most distant from the capsule; and their sides becoming flattened against one another, they are pressed into hexagonal or polygonal forms, the fluid blastema being now almost excluded from between them. In this condition, they very closely represent the cellular tissue of plants.—The final metamorphosis of these cells into moulds for the reception of the solidifying salts, is confined to the portion in close contiguity with the surface of the dentinal pulp. Here the cells increase in length, lose all trace of their nucleus, and become converted into long and slender cylinders, usually pointed at both ends, and pressed by mutual contact into a prismatic form. These elongated prisms have the property of imbibing the calcareous salts of the enamel from the fluid plasma, and of compacting them in a clear and almost crystalline state in their interior: the disappearance of the nucleus being evidently the condition of the absence of any permanent cavity, cell, canal, or other modification of the mineral matter,—at least in the enamel of the calf, which does not present the transverse striæ that are seen in the enamel-fibres of the human subject. These striæ may be due, in Prof. Owen's opinion, to a subdivision of the cavity of the cylinder into compartments, by a multiplication of delicate nucleoli; or by some modification of the walls of the cylinder by the remains of such multiplied nucleoli. As the calcification of the prismatic cells, by their own secreting action, proceeds, they become more and more closely impacted; and at last their membranous walls cease to be distinguished, except at the surface of the enamel next the capsule, where it is still in progress of growth. It is remarkable that the whole of the cellular basis of the enamel-pulp is not converted into the prismatic moulds of the calcareous fibres; at least in the valleys of the complex crown of the molar in the herbivorous mammals, this part of the enamel-pulp originally occupies more space than is subsequently filled by the enamel; the superfluous peripheral part seems to be absorbed, and its place to be occupied by a growth or thickening of the vascular capsule. No capillaries pass from the capsule into the cellular pulp of the enamel; and its cells must, therefore, grow and select their contents, by their own inherent powers, from the subjacent vascular membrane.

Lastly, the blastema of the capsule or "cemental pulp," consists, like the matrix of the dentine and enamel, of nucleated cells, distributed in the midst of a granular blastema, copiously supplied with blood-vessels. The process of calcification begins in the portion nearest the dentine; and consists in the absorption of calcareous matter into the cavities of the cells, and the more close aggregation of the cells to each other. If the capsule be examined during the process of ossification, it is seen that the exterior surface of the newly-formed cement is hollowed into numerous little cup-shaped cavities, in which lie the cells that are next to undergo calcification. It is from the peculiar changes which occur in the nucleus, that the character of the cementum is chiefly derived. The nucleus is large and granular, and almost fills the clear area of the cell; and as the process of cal-

cification takes place, it sends out radiating prolongations, which extend quite to its borders. The calcareous salts which penetrate the cell, do not seem to be deposited in the space occupied by the nucleus; and thus the stellate cavities or lacunæ are left, when the nuclear matter is removed, which are so exactly analogous to those of bone, as to serve to identify the two tissues. These radiating cavities, however, although the most common characteristic of the cementum are not constant; and are notably absent in the thin layer of that substance, which originally surrounds the crown of the human teeth and of the simple teeth of the quadrumana and carnivora. The layer of the capsule, from which this is formed, consists simply of granular blastema, without nucleated cells; and the substance produced by its calcification cannot be regarded, therefore, as properly-developed cementum.

In the deep sockets of the teeth of persistent growth, the matrix is maintained by the constant additions of new blastema and cell-material, to the bases of the dentinal, enamel, and cemental pulps; and the process of conversion is continually going on.

The history of the general structure and development of the Teeth, through which we have now conducted our readers, is contained in the Introduction to the *Odontography*; and it remains for us to give some idea of the nature of the work itself. This consists, in fact, of a detailed account of all the principal modifications of the teeth, whether in form, arrangement, or elementary structure, which are presented in the classes of Fishes, Reptiles, and Mammals; such details cannot be abridged; and when isolated they lose much of their interest. Moreover, it is scarcely possible to make them intelligible without the accompanying plates. We shall therefore confine ourselves, for the most part, to those general observations upon the structure of the teeth in each class, which we think will be most interesting to our readers; adding, here and there, a few isolated facts which will give an idea of the curious results of the investigation.

Prof. Owen is far from asserting that the structure of the Teeth, as made manifest by the Microscope, "forms a new, distinct, and specific guide for classifying the different members of the animal kingdom, and determining their respective types." But he states "that the Teeth, by their microscopic structure, as well as their more obvious characters, form important, if not essential aids to the classification of existing, and the determination of extinct species of vertebrated animals; but in this comparatively restricted sphere, the teeth have different degrees of value, as zoological characters, in different classes; the lowest degree being in the class of Fishes, and the highest in that of Mammals." (Introduction, p. lxxii.)

The teeth of Fishes, in whatever relation they are considered,—whether in regard to number, form, substance, structure, situation, or mode of attachment,—offer more various and striking modifications than do those of any other class of animals. These organs, being here first introduced into the ascending series of animals, manifest the principle of *repetition*, which is seen in many other organs, where they make their first appearance;—as in the mouths of the polypes, or the generative organs of the tape-worm. Hence there are extremely few genera of fishes, that can be characterized by a definite dental formula, like mammals in general; and in many fishes,

as the pike and silurus, the teeth crowd the mouth in such numbers as scarcely to admit of being counted. The *forms* of the teeth in this class are too diverse to admit of being included in any general description; we may mention, however, that among those which are simply conical, there are some so minute, numerous, and closely aggregated, as to resemble the pile of velvet; whilst others equally slender are elongated, so as to form bristles, which are sometimes pointed, recurved, or even barbed like a fish-hook. The pike and other predatory fishes have larger and slightly recurved conical teeth; which strongly resemble the canine teeth of carnivorous mammals. Other teeth, again, present a wedge-shaped laminated form, sometimes with sharp cutting edges, so as to have the character of a lancet; this is particularly seen in the sharks. Prof. Owen mentions a pair of jaws of the great white shark (*Carcharodon*), preserved in the United Service Museum, of which the upper one measures 4 feet, and the lower one 3 feet 8 inches, following the curvature; the length of the largest tooth in this specimen is 2 inches, and the breadth of its base  $1\frac{1}{4}$  inch; the total length of this shark was 37 feet. Now fossil teeth, precisely corresponding in form with those of the *Carcharodon*, occur abundantly in the tertiary formations of both the old and new continents; some of which teeth exhibit the extraordinary dimensions of 6 inches in length and 5 inches across the base. If, therefore, the proportions of these extinct *Carcharodons* corresponded with those of the existing species, they must have equalled the great mammiferous whales in size; and, combining with the organization of the shark its bold and insatiable character, they must have constituted the most terrific and irresistible of the predacious monsters of the ancient deep. From the dimensions of the jaws of the recent specimen just adverted to, it is evident that its gape must have been wide enough to make no difficulty in receiving the body of a stout man; but even this is one of a degenerate race; for the sharks of former times would have "made no bones" of a grampus some 30 or 40 feet long, and 10 or 12 feet round the belly, or of a ship's long boat with its crew of the same dimensions; but would have bitten them in half as easily as we should bite a radish. Truly we may be thankful that we do not live in such times. There is no knowing what fossils may hereafter come to light; perhaps our geologists may alight some day upon a tooth, that Prof. Owen will find to have belonged to a shark large enough to have received the Great Britain into its capacious maw, and strong enough to have cut it in half, clean through the engine-room! Of a form precisely opposite to these, are the flattened crushing teeth of certain fishes; which enable them to masticate the stems of corals, or to break down the bony armour in which their prey may be encased. The surfaces of these are variously sculptured; often in a very beautiful manner.

The *situation* of the teeth is much more various in the class of fishes than it is in any of the higher animals. We cannot give any details on this subject, without giving an account of the numerous bones which enter into the composition of the mouth; but we may state generally, that whilst some fishes, as the sharks and rays, have the teeth restricted to the bones or cartilages bounding the anterior aperture of the mouth, and others, as the roach, dace, &c. have them implanted in the pharyngeal bones only, so as to surround the posterior aperture of the mouth,—others again, as

the wrasse and the parrot-fish, have teeth in both these situations; whilst in many tribes we find teeth implanted on every bone which enters into the composition of the mouth, as the palatines, the vomer, the lingual bones, and the branchial arches, and (more rarely) on the transverse or pteregoid, the sphenoid, and the superior maxillary, as well as on those which surround the anterior and posterior orifices of the mouth. In the lampreys, and in one of the osseous fishes, most of the teeth are attached to the lips.

The teeth of Fishes present greater diversity in the mode, as well as in the place, of their *attachment*, than is observable in those of any other class of animals. With the exception of the anomalous teeth in the rostrum or beak of the saw-fish, and the composite dental masses of the Chimæroids, there are no teeth in fishes which can be said to be *permanent*; and among those few which are implanted in distinct sockets, the roots are nowhere divided,—that mode of connexion being peculiar to mammalia. By far the most common mode of attachment of the fully-formed teeth in the present class, is by a *continuous ossification* between the dental pulp and the jaw; the transition being gradual between the structure of the tooth and that of the bone; and the tooth, prior to the anchylosis, being connected by ligamentous substance, either to a plane surface, an eminence, or a shallow depression in the jaw-bone. This condition sometimes remains permanent, i. e. until the tooth is shed, especially in the cartilaginous fishes, as the sharks and rays. In the *Lophius* (angler or frog-fish), the large posterior teeth always remain moveably connected to the jaw, by highly-elastic, glistening ligaments, which pass from the inner side of the base of the tooth to the jaw-bone. These ligaments do not permit the tooth to be bent outwards beyond the vertical position, the hollow base of the tooth then resting upon a circular ridge growing from the alveolar margin of the jaw; but the ligaments yield to pressure upon the tooth in the contrary direction, and its point may thus be directed towards the back of the mouth; the instant, however, that the pressure is remitted, the tooth flies back, as by the action of a spring, into its usual erect position; the deglutition of the prey of this voracious fish is thus facilitated, and its escape prevented. In the attachment of the incisors of the file-fish, we find a curious sort of double gomphosis, the jaw and the tooth reciprocally receiving and being received by each other; the base of the tooth is hollow, and is supported (like the claws of the *Felenia*, or the hollow horns of the Ruminants) upon a bony prominence which arises from the base of the socket, whilst the socket in its turn embraces the base of the tooth. Generally speaking, even where the teeth of fishes are implanted in sockets, they exhibit a continuity of structure with the adjacent bone at *some* point; so that they are not the free independent organs, which exist in the mammalia. The following are two interesting cases of peculiarity in the attachment of the teeth of fishes.

“If the engineer would study the model of a dome of unusual strength, and so supported as to relieve from its pressure the floor of a vaulted chamber beneath, let him make a vertical section of one of the crushing pharyngeal teeth of the Wrasse. The base of this tooth is slightly contracted, and is implanted in a shallow, circular cavity, the rounded margin of which is adapted to a circular groove in the contracted part of the base; the margin of the tooth, which imme-

diately transmits the pressure to the bone, is strengthened by an inwardly-projecting convex ridge. The masonry of this internal buttress and of the dome itself, is composed of hollow columns, every one of which is placed so as best to resist or transmit in the due direction the superincumbent pressure." (p. 8.)

The wrasses feed on testaceous molluscs, crustaceans, echini, &c., which they seize with their long anterior conical teeth, and crack and bruise by means of these powerful pharyngeals. Allied to these are the scari or parrot-fishes, which are adapted, by a somewhat similar conformation, to browse upon the animal matter of the stony corals that clothe, with a richly-tinted verdure, the bottom of the sea, as the ruminant quadrupeds crop the herbage of the dry land. The irritable bodies of the gelatinous polypes, which constitute the food of these fishes, retract, however, when touched, into the star-shaped cavities of their stony support; and the scari are therefore provided, on the front of their jaws (which are prominent, short, and stout,) with a dental apparatus fitted to break away this calcareous protection; whilst the posterior pharyngeal teeth, which resemble those of the wrasse, are adapted for its comminution. Again,

"In another case, in which long and powerful piercing and lacerating teeth were evidently destined, from the strength of the jaws, to master the death-struggles of a resisting prey, we find the broad base of the tooth divided into a number of long and cylindrical processes, which are implanted like piles in the coarse osseous substance of the jaw; they diverge as they descend; and their extremities bend and subdivide like the roots of a tree, and are ultimately lost in the bony tissue. This mode of implantation of the teeth, which I have detected in a large extinct sauroid fish (*Rhizodus*,) is perhaps the most complicated which has been yet observed in the animal kingdom." (p. 8.)

It will be observed that this case offers no exception to the general rule just stated; for although the roots are so divided, they are not implanted in a distinct socket, but become continuous with the bone.

The *substance*, also, of the teeth of fishes, presents an unusual variety. In some instances they are horny, flexible, and elastic; but in general they are composed of an osseous substance, somewhat denser than that of the jaws to which they are attached. In the flying-fish and sucking-fish, the substance of the tooth is uniform, and not covered by a layer of denser texture; whilst in the shark, and other fish, the tooth is coated with a dense, shining, enamel-like substance, which is not, however, true enamel, nor the product of a distinct organ, but is developed from the same matrix as the rest of the tooth, is formed by the calcification of its external layer, and differs from the subjacent substance only in the greater proportion of the earthy particles, their more minute diffusion through the gelatinous basis, and the more parallel arrangement of the calcigerous tubes. In the *sargus* and *balistes* (file-fish) the dentine is harder, and is covered with a thick layer of a denser substance, developed by a distinct organ, and standing in the same relation with the enamel of higher animals, although differing from it (as already noticed,) in its minute structure, which approaches more nearly to that of dentine. The ossification of the capsule of the matrix gives to the enamel of the teeth of the file-fish, and some others, a thin coating of a third substance, analogous to the "cementum" of mammalian teeth. And in the pharyngeal teeth of the parrot-fish, a fourth substance is added to the structure of the tooth, by coarser ossifica-

tion of the pulp, after its peripheral portion has been converted into the dense ivory. The teeth, thus consisting of dentine, enamel, cement, and coarse bone, are the most complicated as regards their substance, that have been yet discovered.

Four principal modifications are described by Prof. Owen as existing in the tubular structure of the dentine of fishes; and of these we shall extract his account.

"I. Premising that the essential character of this structure is a *cavitas pulpi*, or medullary canal, from which the calcigerous tubes radiate, the first modification which may be noticed is where the tooth is traversed by a number of equidistant and parallel medullary canals, each canal and its system of medullary tubes representing a cylindrical or prismatic denticle, and being separated from the contiguous denticles by a thin coat of bone or cement. This modification is exemplified in the rostral teeth of the saw-fish (*Pristis*), the tessellated teeth of the eagle-rays (*Myliobates*, &c.) and the maxillary plates of the chimæroids. The dense dental case of the jaws of the parrot-fishes may likewise be regarded as an extreme instance of this modification; and we shall find the same structure re-appearing in one of the inferior genera of the mammalian class. In the parrot-fishes, the denticles are quite distinct from one another; but in the saw-fish, chimæra, and eagle-rays, the contiguous medullary canals occasionally anastomose together. In the chimæroid fishes, these anastomoses are more numerous, and the boundaries of the component denticles less distinct; so that they form a transition between the preceding and what may be regarded as the second variety of the tubular structure.

"II. In this modification, the substance of the tooth is traversed by medullary canals, somewhat less regularly equidistant and less parallel than in the first; having the boundaries of their respective systems of radiated calcigerous tubes indicated by the minute calcigerous cells, with which the terminal branches of those tubes communicate; these boundaries being more or less obscured by the terminal branches of the calcigerous tubes extending across into the interspaces of the corresponding branches of an adjoining system of tubes, and anastomosing with them immediately, or through intervening dilatations or cells. The medullary canals here dichotomize more frequently than in the first modification; their anastomoses are more numerous, and the whole tooth, which is generally of large size, is consequently more individualized and compacted. The teeth of the Port Jackson shark (*Cestracion Philippi*) afford a good example of this modification, which also prevails in those of the extinct genera *Ptychodus*, *Psammodus*, &c. In the teeth of the extinct *Acrodus*, the medullary canals, which likewise traverse in great numbers the body of the tooth, assume a more or less wavy course; and this disposition, combined with their numerous anastomoses, leads to the third modification, which at the same time is the most common and characteristic of the dental structure in the class of fishes.

"III. In teeth manifesting this variety of the tubular structure, the dentine is perforated by a network of medullary canals, of which the interspaces are occupied by the calcigerous tubes and cells. The medullary canals are directly continued from those of the common bone with which the base of the tooth is ankylosed, or into which it has been converted. As the medullary canals proceed through the tooth, they maintain a course more or less parallel, and more or less straight, or wavy; but they ramify abundantly, and gradually diminish in calibre as they approach the surface of the tooth. . . .

"IV. The last type of structure is that which characterizes the teeth of most reptiles and mammalia. Here the dentine consists of a single medullary or pulp-canal, and a single system of calcigerous tubes radiating from the central or sub-central canal, at right angles to the periphery of the tooth. The crowns of the teeth of the extinct sauroid fishes and pycnodonts, the maxillary teeth of the ex-



isting file-fishes (*Balistes*) and angler (*Lophius*), the incisors, canines, and molars, of the breams or sparoid fishes, the pharyngeal pavement of the wrasse-tribe (*Labridæ*), the maxillary and pharyngeal denticles of the parrot-fishes (*Scari*), and the lamelliform denticles of the crop-fishes (*Diodon* and *Tetrodon*), likewise the maxillary teeth of some of the genera of sharks and rays, afford examples of this structure." (p. 13.)

Now of these four kinds of structure, the second and third are peculiar to the class of fishes; so that a tooth or even the minute fragment of a tooth, which shall be found to exhibit either of these, may be unhesitatingly referred to the piscine class. The first modification, also, is peculiar to fishes; with the exception of a single mammalian genus, *Orycteropus*. The fourth variety is regarded as belonging to a higher type, because it is characteristic of the teeth of vertebrate animals, which are higher in the scale than fishes; but if the grade of organization of a tooth be rated according to the proportion of vascular substance and vital power which it possesses, then those teeth which most resemble bone should be regarded as the most highly organized; and such are the teeth most common in fishes. In no teeth, however, is the dentine so dense, as in those of certain fishes, especially the scarus and diodon, which have been cited as examples of the fourth modification of the dentinal structure. These teeth strike fire with steel; yet they present an organized structure of minute complexity; and the tubuli are nowhere so numerous, so minute, so beautifully ramified and interlaced together.

The *development* of the teeth of fishes presents several points of great physiological interest. Its history is always the same, up to a certain point, with that of the development of the teeth in higher animals; but the process, in many instances, does not extend beyond the earlier and simpler stages observable in the latter. We cannot forbear extracting nearly the whole passage in which Prof. Owen sets forth the generalities of this subject:

"In all fishes, as in other vertebrate animals, the first step is the production of a simple papilla from the free surface of either the soft external integument, as in the young *pristis* (sword-fish), or of the mucous membrane of the mouth, as in the rest of the class. In these primitive papillæ, there can be very early distinguished a cavity containing fluid, and a dense membrane (*membrana propria pulpæ*) surrounding the cavity, and itself covered by the thin external buccal mucous membrane, which gradually becomes more and more attenuated as the papilla increases in size. In some fishes, as the sharks and rays, the dental papillæ do not sink into the substance of the vascular membrane from which they grow, but become buried in depressions of an opposite fold of the same membrane; these depressions enlarging with the growth of the papillæ, and forming the cavities or capsules in which the development of the tooth is completed. They differ from the capsules of the matrix of the mammiferous tooth, in having no organic connexion with the pulp, and no attachment to its base; the teeth, when fully formed are gradually withdrawn from the above described extraneous capsules, to take their place and assume an erect position on the alveolar border of the jaws." (p. 15.)

Here, therefore, is represented on a large, and, as it were, persistent scale, the *first* and transitory *papillary* stage of the development of the mammalian teeth; and the simple crescentic cartilaginous maxillary plate, with the mucous groove behind it containing the germinal papillæ of the

teeth, offers in the shark a magnified representation of the earliest condition of the jaws and teeth in the human embryo.

"In many fishes, as the lophius and pike, the dental papillæ become buried in the membrane from which they arise; and the surface to which their basis is attached becomes the bottom of a closed sac. But this sac is never lodged in the substance of the jaw, the development of the tooth being completed in the tissue of the thick and soft gum or mucous membrane from which the papillæ were originally developed; hence teeth in various stages of growth are frequently brought away with that membrane when it is reflected from the jaw-bone. The ultimate fixation of the teeth, so formed, is effected by the development of ligamentous fibres in the submucous tissue between the jaw and the base of the tooth; which fibres become the medium of connexion between those parts, either as elastic ligaments, or by continuous ossification." (p. 16.)

Here, then, we meet with the *second* or *follicular* stage in the development of the mammalian tooth; the pulp being imbedded in a follicle of the mucous membrane; but the eruptive stage of the tooth takes place without any previous inclosure of the follicle and pulp in the substance of the jaw.

"In the *balistes*, *sparoids*, *sphyræna*, *scarus*, and many other fishes, the formation of the teeth presents all the usual stages which have been observed to succeed each other in the dentition of the most highly-organized animals; the papilla then sinks into a follicle, becomes surrounded with a capsule, and is then included in a closed alveolus of the growing jaw, where the development of the tooth takes place, and is followed by the usual eruptive stages." (p. 16.)

Thus, even in fishes, we have examples of the most complete form of dental development; as might, indeed, have been anticipated from the fact that the teeth, in some of this class, present the union of all the structures which are met with in the superior tribes. It is obvious that where the development ceases at the papillary stage, as in the shark, there *can* be no distinct enamel-pulp; but in every case in which the development goes on to the follicular stage, an enamel-pulp *may* be developed. It is seldom very conspicuous, however; and the substance into which it is converted differs considerably, as formerly stated, from the enamel of the teeth of higher animals, and bears a much greater analogy to the dentine. The cementum, where it is present, is developed on precisely the same plan as in higher animals; namely, by the ossification of the outer layer of the capsule.

In all fishes, the teeth are being continually shed and renewed; the only teeth which can be called permanent being those in the rostrum of the saw-fish; and even these being capable of being properly regarded, in Prof. Owen's opinion, as modified dermal spines. Where the first teeth are developed in alveolar cavities, the succeeding ones follow them in the vertical direction; and owe the origin of their matrix to the continuation, from the mucous capsule of their predecessors, of a caecal process, in which the papillary rudiment of the dental pulp is developed, just as, according to Mr. Goodsir's researches, the follicles of the human permanent teeth are formed as diverticula from those of the deciduous. But in the great majority of fishes, the germs of the new teeth are being continually developed, as those of the old originally were, from the free mucous membrane of the mouth,—a condition which is peculiar to the present class. The angler, the pike, and many of our common fishes illustrate this mode of dental reproduction. But it is peculiarly conspicuous in the cartilaginous fishes, in

which the entire phalanx of their numerous teeth is ever moving slowly forward, in a sort of rotatory progress over the alveolar border of both upper and under jaws; the teeth being successively cast off as they reach the outer margin, and new teeth rising up in equal proportion from the mucous membrane behind the rear rank of the phalanx. This endless succession of new and sometimes highly-complicated matrices, could hardly seem otherwise than a waste, as Prof. Owen justly observes, to those who hold the doctrine that the process of dental development is one of "transudation" or "excretion," and who regard the pulp in the light of a gland; whilst it is the necessary consequence of the "conversion" of the pulps into teeth, that as fast as the latter are to be shed and replaced, new pulps should be produced to supply them.

For more minute details regarding the differences of form and structure, which characterize the teeth of the several subdivisions of the class, we must refer to the 'Odontography' itself; contenting ourselves with adducing a very interesting example of their value, as serving to determine the real nature of fragments which present themselves in a fossil state. Two fossils, consisting of portions of jaws with teeth of a simple conical form, and evidently belonging to the same or to nearly allied genera, though of distinct species, had been described by two eminent American naturalists, Dr. Harlan and Dr. Isaac Hays, as extinct members of the Saurian order of reptiles; Prof. Agassiz, however, was led, from the external characters of the jaws and teeth in question, to believe that they might belong to the Scomberoid (mackerel) family in the class of fishes. Having examined the microscopic structure of the teeth, Prof. Owen found that they were traversed by medullary tubes; of which the larger maintained a nearly parallel longitudinal course throughout the body of the tooth, and were united by smaller transverse branches; the spaces between these everywhere exhibiting plexiform groups of flexuous calcigerous tubes, proceeding from the medullary canals. Now it has been already stated, that this peculiar distribution of the medullary canals in teeth is restricted to fishes; the idea of the reptile character of these remains was therefore altogether untenable. Further, the particular modifications of this structure presented by the teeth in question, are most closely allied to those which characterize the teeth of the Scomberoid fishes; so that justice of the determination made by Prof. Agassiz was by this mode of investigation fully confirmed.

We now pass on to the class of Reptiles; in certain groups of which, as is well known, teeth are altogether wanting. In the tortoises and turtles, the jaws are covered by a sheath of horn, which in some species is of considerable thickness and very dense; its working surface is trenchant in the carnivorous species, but variously sculptured, and adapted both for cutting and bruising, in the vegetable-feeders. That this substance really has a greater analogy with the teeth which it replaces, than would be at first sight imagined, appears from the history of its development; for this commences (as in the parrot-tribe among birds) from a series of distinct papillæ, which sink into alveolar cavities, regularly arranged (in *trionyx*) along the margins of the upper and lower jaw-bones; these alveoli are indicated by the persistence of vascular canals long after the originally-

separate tooth-like cones have become confluent, and the horny sheath completed. The toads, among the Batrachia, afford another example of the absence of teeth; and here there is no compensating structure. In the Saurian order, there is no exception to the general rule of the presence of teeth; and among the serpents there is but one, the *Coluber scaber*. In this animal, there is a very remarkable adaptation of other parts, to make up for the deficiency; the inferior spinous processes of certain of the cervical vertebræ are unusually prolonged, and penetrate the coats of the œsophagus; and their extremities, which are thus introduced into the alimentary canal, are coated with a layer of hard dentine, and form substitutes for the true teeth, which, if not always entirely absent, are merely rudimental in the ordinary situations in the mouth.

The number of teeth in reptiles is usually greater than in mammalia, and less than in fishes; the smallest known number, where teeth exist at all (except in the case of the anomalous *Dicynodon*, p. 403), is in certain Monitors, which have thirty teeth; and certain Batrachians, which have upwards of eighty teeth in each lateral maxillary series, present the largest number. It is interesting to observe that the number is the greatest and least definite in those reptiles, which present the nearest approach to fishes; and that it diminishes, and shows a nearer approach to definiteness, in the higher parts of the series. The number of teeth, however, is rarely so fixed and determinate in any reptile, as to be characteristic of the genus or species.

In regard to *situation*, also, the teeth of reptiles are intermediate between those of fishes and mammals. They are frequently present in the jaws only, as in the crocodiles and many lizards; but in several instances, especially among the batrachia, they are present also upon the roof of the mouth, being implanted in the palatine and pteregoid bones, the vomer and sphenoid; and these last are usually arranged in several rows, like the 'dents en cardes' of fishes. The teeth of reptiles are for the most very simple as to *form*; being generally of a nearly conical shape, with the crown more or less curved, and the apex more or less acute. Thus they are adapted rather for seizing and holding the prey, than for dividing and masticating it. The greatest departure from the usual form is seen in the herbivorous Iguana, and the gigantic extinct Iguanodon which resembled it in habit; in the teeth of these animals, the crown is expanded, and the margins are notched; and those of the Iguanodon are further marked by longitudinal ridges, presenting the most complicated external form ever met with in this class. In no reptile does the base of the tooth ever branch into fangs; which is a character of great importance in the distinction of the teeth of reptiles from those of mammals.

The mode of *attachment* of the teeth of reptiles presents several varieties, which are extremely important in zoological classification, and in the recognition of fossils. When the teeth remain distinct from the jaw, they may be lodged either in a continuous groove, as in the *Icthyosaurus*, or in separate sockets, as in the *Plesiosaurus* and *Crocodylians*. As a general rule, however, they are anchylosed, at some point, to the bone which supports them; and it is in the place and manner of the anchylosis, that the differences exist which have been just alluded to.

"The base of the tooth is anchylosed to the walls of a moderately deep socket

in the extinct megalosaur and thecodon. In the labyrinthodons and cæcilia among the batrachians; in most ophidians; and in the geckos, agamians, and varanians, the base of the tooth is imbedded in a shallow socket and confluent therewith. In the scincoidians, safeguards, in most iguanians, in the chameleons and most other lacertian reptiles, the tooth is ankylosed by an oblique surface extending from the base more or less upon the outer side of the crown, to an external alveolar plate of bone; the inner alveolar plate not being developed. In the frogs, the teeth are similarly but less firmly attached to an external parapet of bone. The lizards which have the teeth thus attached to the side of the jaw, are termed 'pleurodonts.' In a few iguanians, the teeth appeared to be soldered to the margins of the jaws; these have been termed 'acrodonts.' In some extinct lacertians, as the mososaur and leiodon, the tooth is fixed upon a raised conical process of bone.

"These modifications of the mode of attachment of the teeth of reptiles are closely adapted to the destined application of those instruments and to the habits of the species; we may likewise perceive that they offer a close analogy to some of the transitory conditions of the human teeth. There is a period, for example (at the sixth week), when the primitive dental papillæ are not defended by either an outer or an inner alveolar process, any more than their gigantic calcified analogues in the extinct mososaur. There is another stage (at the seventh or eighth week,) in which the groove containing the dental germs is defended by a single external cartilaginous alveolar ridge; this condition is permanently typified in most existing lizards. Next there is developed an internal alveolar plate, and the sacs and pulps of the teeth sink into a deep but continuous groove, in which traces of transverse partitions soon make their appearance; in the ancient ichthyosaur, the relation of the jaws to the teeth never advanced beyond this stage. Finally, the dental groove is divided by complete partitions (at the sixth month,) and a separate socket is formed for each tooth; and this stage of development is attained in the highest organized reptiles, as the crocodile." (p. 183.)

The *substance* of the teeth of reptiles usually consists for the most part of dentine and cement; these alone are present in the teeth of the Batrachian and Ophidian reptiles, in which a thin layer of cement invests the central body of dentine, and follows any inflections or sinuosities that may characterize the surface of the latter. In the Saurians, the crown of the tooth is usually defended by a thin coat of enamel; whilst the interior is not unfrequently filled up by bone, formed by the ossification of the last remains of the pulp,—which may take place not merely in the teeth which are ankylosed to the jaw, but also in some teeth, as those of the Ichthyosaurus, which remain free.

The varieties of dental *structure* are few in the reptiles, as compared either with fishes or mammals; and its most complicated condition arises from the interblending of the dentinal and other substances, rather than from modifications of the tissues themselves. In the teeth of most reptiles, the intimate structure of the dentine corresponds with that which has been described as its fourth type or modification in the teeth of fishes, and which is the prevailing structure of mammalian dentine, viz. the radiation of a system of minute calcigerous tubes from a single pulp-cavity, at right angles to the external surface of the tooth. The most essential modification of this structure is the intermingling of cylindrical processes of the pulp-cavity, in the form of medullary canals, with the finer tubular structure; as is seen in the Iguanodon. These radiations from the central medullary cavity cannot, however, be confounded with the reticulated arrangement of the medullary canals in the teeth of fishes; for they run,

at pretty definite intervals, through the dentine, parallel with the calcigerous tubes, which do not arise from them, but (as in the teeth of other reptiles) from the central medullary cavity alone. A similar arrangement is to be found in the coarse dentine, which characterizes the teeth of the Sloth and Megatherium, animals formed, like the gigantic Iguanodon, for a vegetable diet. The cementum is simply and minutely cellular upon the crowns of the teeth of reptiles; but it exhibits the radiated cells at the base of the tooth in the anourous Batrachians and in Saurians. The enamel is sub-transparent, dense, and minutely fibrous, in all the reptiles which have their teeth defended by this substance.

Some very curious modifications present themselves in the teeth of certain reptiles, as a consequence of a sort of folding of the dentine and its envelope of cement. A simple example of this is seen in the poisonfang of the venomous serpents; which, as is well known, is furnished with a canal that passes through the centre of the tooth at its lower part, and forms a groove along its side nearer the extremity. To form this canal, the two margins of the tooth are folded, as it were, towards each other; where they meet, they will completely inclose the canal, so as to convert it into a tube; and where they do not meet, they will constitute a groove. Notwithstanding this singularly-modified disposition of the dentine, which is thus converted at the lower part of the tooth into a hollow cylinder, it still retains its normal structure; and although the pulp-cavity is reduced to the form of a crescentic fissure, the calcigerous tubes continue to radiate from it, according to the usual law. A similar change is carried to a far greater extent, in the tooth of an extinct reptile, which has received from Prof. Owen the appropriate title of *Labyrinthodon*, from the extraordinary peculiarities of its dental structure. Of these peculiarities we despair of giving our readers an adequate idea without the aid of a figure; since they produce the most complicated structure that has yet been encountered in the tooth of any animal. We must request them in the first place to conceive of the conical tooth, with a central pulp-cavity, as having its substance composed of a number of vertical plates, arranged in a radiating manner. Each of these plates is composed of dentine, arranged on the two sides of a prolongation or 'medullary ray' of the central pulp-cavity; and from this prolongation the tubuli of the plate of dentine originate on either side. On the other hand, the capsule sends prolongations from the exterior of the tooth, which pass between the contiguous plates; and the ossification of these gives to each plate a coating of cement, along its whole surface. Now let us suppose that all these plates, instead of having plane surfaces, were thrown into cerebriform convolutions; still preserving, however, their general radiating direction; we shall then have an idea of the arrangement of the parts of the tooth of the *Labyrinthodon*. The links by which this complex arrangement are connected with simpler modes of conformation, are seen in the base of the teeth of the *Ichthyosaurus*, and in the *Lepidosteus*, a sauroid fish of the present epoch. The remarkable elegance of this structure, when displayed by a transverse section of the tooth, is evidenced by the fact, that within a short time after the publication of the Second Part of the *Odontography*, a pocket-handkerchief was purchased in Manchester, bearing an enlarged copy of the section of the *Labyrinthodon* tooth as its pattern. We are sure that if

our manufacturers and designers would more frequently have recourse to nature for suggestions, the progress of their arts would be greatly accelerated.

We shall have a little more to say of the Labyrinthodon presently; but must first extract Prof. Owen's general remarks in regard to the *development* of the teeth of reptiles.

"The teeth of reptiles are never completed, as in certain fishes, at the first or papillary stage; but the pulp sinks into a follicle, and becomes inclosed by a capsule: the process of development, however, never offers the eruptive stage, in the sense in which this is usually understood, as signifying the extrication of the young tooth from a closed alveolus.

"The completion of a tooth is soon followed by preparation for its removal and succession; the faculty of developing new tooth-germs seems to be unlimited in the present class, and the phenomena of dental decadence and replacement are manifested at every period of life: the number of teeth is generally the same in each successive series, and the difference of size presented by the teeth of different and distant series is considerable.

"The new germ is always developed, in the first instance, at the side of the base of the old tooth, never in the cavity of the base; the crocodiles form no exception to this rule. The poison-fangs of serpents succeed each other from behind forwards; in almost every other instance, the germ of the successional tooth is developed at the inner side of the base of its predecessor.

"In the frog, the dental germ makes its appearance in the form of a papilla, developed from the bottom and towards the outer side of a small fissure in the mucous membrane or germ, that fills up the shallow groove at the inner side of the alveolar parapet and its adherent teeth; the papilla is soon enveloped by a capsular process of the surrounding membrane: there is a small enamel-pulp developed from the capsule opposite the apex of the tooth; the deposition of the earthy salts in this mould is accompanied by ossification of the capsule, which afterwards proceeds *pari passu* with the calcification of the dentinal papilla or pulp; so that, with the exception of its base, the surface of the uncalcified pulp alone remains normally unadherent to the capsule. As the tooth acquires hardness and size, it presses against the base of the contiguous attached tooth, causes a progressive absorption of that part, and finally undermines, displaces, and replaces its predecessor. The number of nascent matrices of the successional teeth is so great in the frog, and they are crowded so closely together, that it is not unusual to find the capsules of contiguous tooth-germs becoming adherent together as their ossification proceeds. After a brief maceration, the soft gum may be stripped from the shallow alveolar depression; and the younger tooth-germs in different stages of growth are brought away with it." (p. 186.)

The mode of development of the teeth of serpents does not differ essentially from that of the teeth of the bratrachian above described; except in the relation of the papilla of the successional poison-fangs to the branch of the poison-duct that traverses the cavity of the loose mucous gum in which they are developed: this relation has not yet been clearly developed. We should be disposed to think that a new branch of the duct is developed for every papilla; rather than that the new poison-fang can be brought into the same relation with the severed duct of the poison-gland, as the displaced fang which it succeeds.

In the greater number of the lizard tribe, the phenomena of dental development nearly coincide with those which have been just detailed in regard to the frog; the successional teeth being developed on the inner side of the old ones, and coming to press upon and replace the others.

"In the Acrodont lizards, and those in which the teeth are ankylosed to the summits of bony processes, the successional teeth are in like manner developed at the inner side of the supporting processes, gradually penetrate them as their growth proceeds, and finally undermine and displace the tooth, and become in their turn ankylosed to new bony eminences of the alveolar tract. The jaws of the gigantic Mososaur exhibit on a large scale different stages of this mode of shedding and replacement, which is so general in the class of reptiles.

"In the Ichthyosaurus, in which, by the development of an internal as well as an external alveolar plate, the teeth are lodged in a deep continuous groove, the successional germs were also developed in this extinct reptile at the inner side of their predecessors; and from the solidification of the implanted base of the fully-formed tooth, occasioned an extensive absorption of its inner side, before it finally yielded to the lateral pressure.

"In the Crocodile, the tooth-germ is developed from the vascular membrane covering the base of the internal wall of the socket; it is soon invested by a capsule, and by its pressure causes the formation of a shallow recess, or secondary alveolus, in the contiguous bone. In this alveolus, however, it never becomes inclosed like the successional teeth in most Mammalia; for, exerting equal pressure against the fang of the contiguous tooth (which, from being incompletely formed, has a wide pulp-cavity with very thin walls), the nascent tooth soon penetrates that cavity, and quits the recess in the alveolar plate in which it was originally situated. Thus the stage of development corresponding with the 'eruption' of the tooth in the mammalia, is immediately followed by the 'inclusion' of the new tooth in the pulp-cavity of its predecessor. . . . The rapid succession of tooth-germs, which stamps the impress of decay upon their predecessors often before the growth of these is completed, though common to many reptiles, is most strikingly manifested in the crocodiles; in which three and sometimes four generations of teeth, sheathed one within the other, are contained in the same socket." (p. 187.)

The Saurian group furnishes one singular exception to the general rule which we have seen to prevail through the reptile class, in regard to the want of permanence in the individual teeth; this is furnished by the *Dicynodon*, an extinct Saurian of South Africa, which had in the upper jaw two long canine tusks, that must have grown and been maintained through life of due size and strength, like the tusks of the boar and walrus. With the exception of these two anomalous teeth, the jaws of the *Dicynodon* were edentulous.

We cannot adduce a better example of the extensive applicability of the microscopic test, than the exact determination which it enabled Prof. Owen to make, of the identity in character between certain teeth found in two different and remote deposits,—the consequent settlement of the question as to the relation of equivalence between these deposits,—and the extraordinary results to which he was conducted by the investigation thus commenced, as to the former existence of a gigantic animal of the Frog kind, by whose feet those imprints were made in the sand, which, preserved in the hardened sands without any other traces of the animal that made them, have been a source of so much perplexity to geologists. The first-discovered fossils belonging to the Batrachian genus now termed *Labyrinthodon* (from the extraordinary structure of the teeth, already described) were certain detached teeth, found in the keuper sandstone of Wirtemberg, and described by Prof. Jaeger as the remains of some gigantic Saurian reptile, to which he gave the name of *Mastodonsaurus*. Other fossil fragments of jaws and teeth, from the same formation, and believed



by Prof. Owen to be referrible to the same genus, were described under the name of *Phytosaurus*. A third remarkable and characteristic fossil, discovered in the keuper sandstone, consists of the occipital portion of the cranium with two large and separate condyles, as in the Batrachian reptiles; and on this fossil Prof. Jaeger founded his species called "*Salamandroides giganteus*." Now in a sandstone deposit in Warwickshire, certain teeth or fragments of teeth, at first supposed to be of Saurian character, were discovered a few years since; and a question having been raised whether this sandstone was the equivalent of the keuper or the bunter division of the new red-sandstone formation, as developed in Germany, it became a matter of great scientific importance to determine whether the Warwick and Wirttemberg fossil teeth were specifically or generically identical, or whether they were altogether dissimilar. From what has been already stated as to the general correspondence of the teeth of reptiles with one type of form, it will not be surprising that Prof. Owen found himself unable to pronounce upon this question, from external characters; it only remained to resort to the test of intimate structure; and on this he did not find any great hopes.

"Hitherto in investigating the intimate texture of the teeth of Saurian reptiles, I had found the dentine or body of the tooth to consist of the finest calcigerous tubes, radiating according to the usual law, from the pulp-cavity, at right angles to the external surface of the tooth, which is covered by a simple investment of enamel; from the prevalence of this structure in the simple conical teeth of reptiles, I did not build any very strong hopes of detecting such modifications of dental structure in the similarly simple teeth of the so-called *Mastodonsaurus*, and of the tooth from the Warwick sandstone, as would be sufficiently marked and obvious to carry conviction of their generic, much less specific identity. But in this I was agreeably and unexpectedly deceived.

"When I refer to fig. 1, in Plate 64 A, and state that the first transparent transverse section of the tooth of the *Labyrinthodon* (*Mastodonsaurus*) *Jaegeri* that was placed under the microscope and viewed by transmitted light with a low magnifying power, presented the singularly complicated structure there exhibited, the anatomist, conversant with the known modifications of dental structure in the animal kingdom, may well conceive my surprise. It was not, indeed, until I had had sections made in various directions, from the portions of the tooth of the *Labyrinthodon* *Jaegeri* transmitted to me, and had studied them intently at several successive examinations, comparing the appearances they presented with those of numerous examples of the teeth of Saurians, Batrachians, and other animals, that I at length comprehended the nature and principle of the singular cerebriform convolutions or sinuosities, which pervaded every portion of the tooth of this most remarkable reptile of the keuper sandstone." (p. 200.)

The next step was, of course, to make a similar examination of the teeth from the Warwickshire sandstone; the results of which were such as to leave no doubt of their very close alliance to those just alluded to; all the peculiarities of this most extraordinary type of dental structure being so closely preserved in the British specimen, as to leave no doubt of its generic identity at least with the German,—the differences being such as might be reasonably expected in distinct species of the same genus. Thus, therefore, the question was settled, so far as its immediate geological bearing was concerned; since the existence of similar remains, of so very singular a character, in the two deposits in question, was sufficient with other evidences to prove their equivalence. But a most interesting zoological question then arose, as to the nature of the animal to which these remains

belonged. As already mentioned, they had been referred, from *external* characters, to the Saurian order; but these characters were by no means conclusive, owing to the general similarity in form, which prevails through the teeth of the entire class. The nearest approach, among reptiles, in the *internal* structure of the teeth, is presented by the *Ichthyosaurus*; in which the characters of the Saurian head and teeth are combined with Ichthyic vertebræ and extremities. A nearer approach was presented in the teeth of the *Lepidosteus* which possesses, with the general conformation of a fish, a bifid air-bladder resembling the lungs of reptiles, and other characters of elevation towards the Sauria. Hence it might be expected, that the labyrinthodon would combine with its reptile characters an affinity with fish; and this idea was fully borne out by the examination of fragments of the skull of the Warwick fossil, with which the teeth remain in connexion; from which it appeared to be an unquestionable result, that the labyrinthodon, with many affinities to the crocodilians, was in reality a gigantic batrachian with peculiar affinities to fishes. With this clue, there could be little hesitation in regarding the occipital fragment of the Keuper sandstone, whose *batrachian* character had been recognized when first discovered, as a part of the animal to which the teeth belonged, —as representing, in fact, the very *Labyrinthodon Jaegeri*, whose teeth had been described as Saurian.

Of this curious genus, five species have been determined by Prof. Owen; the smallest of these far exceeding in dimensions the largest living species of the same order; and the larger ones measuring several feet in length. One of these appears to have had its skin covered, in part at least, with bony scutes resembling those of the crocodile; but as the skin, in all animals, is one of the most variable of organs, this character must not be regarded as indicative of any close affinity, since all the essential points of structure hitherto discovered agree in assigning to the animal a place among the tail-less batrachia. This is indicated by the very large proportionate size of the posterior extremities; which must have been three or four times the length of those of a crocodile of corresponding size as far as regarded the anterior portion of the body; but which would harmonise very well with the relative length of those of some of the living tail-less batrachians.

We have already alluded to certain foot-prints found in various localities in the new red sandstone, as having been a fertile source of geological speculation. These impressions indicate an animal remarkable for the disproportionate magnitude of its posterior extremities, and also for the singular shape of its foot; and it had been suggested by more than one palæontologist, that the impressions of the *Cheirotherium* (which was the provisional name given to the unknown animal in question) were those of a batrachian. In consequence of certain peculiarities in these impressions, however, it was obvious that the animal must have been quite distinct in the form of its feet from any known batrachian or other reptile. Now we have seen that in the beds of the very same formation, we find also the teeth and bones of a batrachian reptile, of dimensions and proportions such as might produce the footsteps, and differing from all other batrachia —indeed from all other reptiles—in the structure of its teeth, and therefore (it may be fairly inferred,) in that of its extremities. When it is also borne in mind that both the fossils and the footprints are peculiar to the

new red-sandstone, we think it will be admitted that a very strong case has been made out for the establishment of the identity of the *Labyrinthodon* and the *Cheirotherium*—or, in other words, for the belief that the foot-prints so remarkably preserved were made by the feet of the *Labyrinthodon*.

The evidence required for the conclusive establishment of this idea, may very probably be furnished ere long, by the discovery of the bones of the extremities of the *Labyrinthodon*; the nature of which cannot be exactly predicated from the fragments at present known.

We must reserve the consideration of the teeth of Mammals, as well as what we intend to say of the researches of Dr. Carpenter and Mr. Bowerbank, to another occasion.

#### ART. IX.

*Imperversuche und natur-historisch pathologische Untersuchungen zur Erforschung der Helminthiasis als Contagium.* Einer Inauguralschrift von P. F. H. KLENCKE.

*Experiments in Inoculation and Pathological Researches and Natural History to develop Helminthiasis as Contagion.* An Inaugural Dissertation by P. F. H. KLENCKE.

THE old doctrine of the parasitic origin of certain diseases has received a new development since the microscope has become more generally applied to pathology. There is nothing in the doctrine itself which should lead the physician to reject it without inquiring into the facts on which it is based; and the inquiry itself is comparatively easy because (as in the case before us) it resolves itself mainly into a judgment as to the truthfulness of the narrator and to his competence to observe facts and describe them accurately. The researches of Henle, Langenbeck, jun. and others, on the parasitic origin of certain diseases may now indeed be considered amongst the established contributions to pathology.

In the work now under judgment, we have the inquiry as to the parasitic origin of disease limited to researches into the natural history of certain entozoa. The author makes little or no reference to the pathology of cells or of microscopic mass-like organisms. It is simply an inquiry into the generation, development, and habits of the parasitic animals found within the human body, together with observations on the pathological phenomena they excite, and the therapeutic means necessary for their removal.

Dr. Klencke divides human entozoa into two classes, according as their habitation is within the intestinal canal or without it. In the latter class are the various kinds of hydatids, the *trichina spiralis* and the *distoma hepaticum*; in the former, *ascarides*, *bothryocephali* and *tænia solium*.

*Hydatids.* These may be divided into five orders: 1, *hydatis spuria*; 2, *acephalocystis*; 3, *echinococcus*; 4, *polycephalus* or *cænurus*; 5, *cysticercus*. The cyst is the common characteristic of these animals, in which vesicular structures may be discovered with the naked eye. Dr. Klencke includes in the term hydatid all those bladder-like structures found in the living organized tissues, which either possess the faculty of motion or of propagation. According to this definition the hydatid is to be considered as an individual.

*Hydatis spuria*. This is often mistaken for a true hydatid. According to Klencke it is a *cellula primordialis hydropica subindividuata*. He has often detected it in the brain and spinal cord, and seen it in every stage of development. Its formation thus happens: the membrane of a primordial cell has an increased power of endosmosis and a diminished power of assimilation. Fluids are thus imbibed, while no granular matter is deposited. All the plastic activity of the enlarged cell that is not directed to assimilation is wasted after the early disappearance of the nucleus in the production of brood-cells which take on an action like that of the mother-cell, and bursting the latter, assume an independent existence. Their origin is in fact analogous to that of carcinoma.

*Acephalocystis*. This is not an abnormal primordial cell as the preceding, but a true animal. It is a rare species, but is often confounded with the *hydatis spuria*, and other parasites. Klencke met with it only thrice in twenty-one cases presented to him as examples of the disease. It is found of various magnitudes, but is usually about the size of a lentil or a pea, and is of an opal colour, particularly when found in the brain. The vesicle consists of two membranes: the one like an epithelium, fine and shining, and having a cellular organization; the other porous, tense, yellowish, and sometimes fibrous. Occasionally little canal-like, membranous projections pass through the pores to the cavity within. The latter contains a clear fluid in which the fibrinous canals float; these canals being probably intestinal openings. The cavity also contains a central body of about  $\frac{1}{16}$ — $\frac{1}{8}$  line in magnitude, and presents a caseous coagulated appearance. This body consists of microscopic cells, which are in fact the ovaries of the animal. Sometimes the ovary is hard and shining not unlike ivory; this condition Klencke considers to be a pathological state. The relations of the acephalocyst hydatid to the next species are curious; it is simply a mass of the ova of the

*Echinococcus*. In form this hydatid is somewhat like a pear, and is inclosed in a vesicle containing a clear yellowish fluid. If the general cyst (made up of cellular tissue) be opened, it is found to contain a number of these smooth elastic vesicles. Part are adherent to the inner surface, part swim about freely within the cavity. The upper portion of the creature consists of a flat surface set round with a circlet of little arms or hooks which it can elevate, depress, and direct at pleasure. They are hollow, and are made up of longitudinal and circular fibres. At that part of the body which may be termed the neck, there are sometimes two, sometimes four little appendages which look like a suction apparatus. These are only observed in adults. The ovaria are situate beneath the inner surface of the epithelium. According to Klencke's researches, the parent dies when the ova have advanced in development to a certain stage, and the latter then constitute an acephalocyst.

*Polycephalus cœnurus*. This curious hydatid consists of an irregular shaped vesicle to which are attached a number of polypus-like necks, each of which is a distinct animal, and which vary in size according to their age and stage of development, thus presenting an opportunity for examining each stage. Some may be observed to be perfectly developed while others are in the embryo state, and appear like little holes or dimples in the cyst as if it had been pressed inwards at this point from without.

The perfect animal consists of a retractile neck appended to a fluid sac or cæcum, which appears to be formed by the doubling in of the membrane of the common cyst. This latter consists of two layers,—an external and fibrous, and an inner or epithelial. The latter runs to form the cæcum or blind sac of the animal; from the former is developed the neck or so-called head. The head has appended to it a sheath surrounded with a circlet-like formation of long and narrow arms, sometimes twenty in number. These hydatids, like polypi, multiply by buds, or separations from the parent sac.

5. *Cysticercus*. This animal is conical in form, and consists of a neck and appendent vesicle. It is generally independent of any general cyst, and whenever the latter is found in connexion with the creature, it may be considered as the rudiment of the parent animal, or as a product of exudation and of new formation out of the surrounding tissue. The vesicle of the cysticercus consists of two membranes, an inner and an outer. The outer membrane contains transverse and circular fibres, developed at the neck into a true muscular structure by which that appendage is moved. The inner or epithelial membrane has a cellular character. The upper part of the neck terminates in a conical point whose upper end is surrounded by a double circle of long and short arms or rays, often more than thirty in number, which are capable of being elevated or depressed at will. On the side of this cone are four hollow half spheres in the centre of which is an opening furnished with a sphincter.

The cyst or vesicle of adult cysticerci contains a number of regularly formed small bodies which are made up of a transparent structure resembling the vitreous humour, and which Klencke considers to be ova. These bodies have also been found externally to the cyst. The reproduction of the cysticercus takes place by the collapse or destruction of the mother-cyst, so soon as these ova have attained a certain degree of development.

*Pathological relations of hydatids.* We shall now follow our author through his researches into the morbid phenomena induced by the presence of hydatids, and into the special organs in which they are developed.

*Hydatids of the brain.* All the preceding kinds of hydatids are found in the brain, but the symptoms differ according to the seat and habits of the hydatid. The *hydatis spuria*, however, is that most frequently observed, but since it is more nearly allied to the elementary constitution of the brain than the true animal hydatids, being in fact an imperfect or abnormal cell reproducing itself by blastidia, the morbid phenomena it induces are not strongly marked, and it may indeed exist in the brain without exciting any indications of its presence whatever. Klencke has seen instances in which the fibrils of nerves were compressed, and the neuroma itself separated and destroyed by interstitial growths of a vascular, cellular, or fibrous nature, and yet no indications of these changes were to be observed during life. The false hydatid is found in almost every part of the brain. Klencke has often noticed them in the fourth ventricle, in the fornix, the substance of the hemispheres, the optic nerves and commissure, the pons, between the surface of the brain and the arachnoid, and between the latter and the dura mater. In one case they were the immediate cause of amaurosis; in another they occupied nearly the whole of

both hemispheres inducing anæsthesia, dullness of intellect, and loss of memory. The pain they cause is constant, and in this they differ from true hydatids, the pain of the latter being intermittent. The hydatid spuria is seldom inclosed in a general cyst, but is scattered throughout the part affected, in groups of different magnitudes, and causes no change in the surrounding cerebral substance, except that which would follow on compression.

The acephalocysts are often confounded with the preceding. They are quite distinct, and are simply the ovaria of the echinococci. They are generally combined within a cyst, with which, however, they have no anatomical connexion, and which has a true serous character, containing serum, and having a capillary system. Klencke has seen them in the substance of the hemispheres, in the lateral ventricles, and in the choroid plexus.

The symptoms of acephalocyst hydatids vary much. Generally there is headache, but not more intense than is usual in other diseases. In plethoric subjects, apoplexy may be easily induced as a consequence of their irritating action on the vascular system. Peculiar affections of the muscular system, ending ultimately in epilepsy, result from their development in the pons, fornix, crura cerebri, hemispheres of the cerebellum, or base of the medulla oblongata, or when they compress those structures. When limited to the cerebral hemispheres, they induce only stupor, or headache, and in extreme cases, apoplexy; and if the hydatids be numerous, the respiration is slower. If seated in the corpus callosum the pulse is rendered slow, but quickened if they be in the pes hippocampi. Acephalocysts in the corpora striata, thalamia, and crura cerebri are indicated by hallucinations, flashes of light, blindness, spasmodic colic, and spasm of the stomach; if they be in the corpora quadrigemina, there is paralysis of the colon, and of the intestinal canal and bladder, with abolition of the sexual function if the cerebellum be implicated. These statements are apparently made by the author as the result of observation, (one very interesting case is fully detailed,) but he seems to doubt how far they should be depended upon in diagnosis without further confirmation.

The *polycephalus* excites the rotatory disease in sheep, and has been observed in man to induce headache, rotation, loss of memory, and insensibility to light. The third ventricle and the aqueduct of Sylvius are their most usual locality, but they have been seen in the substance of the pons and in the lateral ventricles.

The cysticercus is commonly found in the choroid plexus. Whenever Klencke has found it here, he has also detected it in other organs and structures of the body.

The periodic headache and vertigo characteristic of the two last-mentioned species are dependent, Klencke thinks, upon the greater or less movement of the animal. Every motion of the neck on the crown of hooks around it must constitute an irritation equal to the sudden production of these phenomena. Inflammation of the brain, the formation of serous sacs, and serous effusion are the usual concomitants of cerebral hydatids.

*Case of hydatids of the brain.* We record this case as an interesting contribution to cerebral pathology. The patient was a man, aged 40, a gourmand, and addicted to sexual intercourse. For some years he had suffered from a profuse gonorrhœa, when he gradually became hypochon-

driacal. In addition to a very peculiar expression of countenance, his pupils were dilated, and his eyelids were continually opening and shutting spasmodically. He also experienced slight convulsive twitches, and pain in the course of the trigeminus and its branches which were much increased if he spoke or read much. Subsequently the patient complained of a trembling of the hand when he attempted to write; and when he closed his eyes or thought in the dark he experienced a sudden gush of tears. There was a remarkable sympathy between the state of his eyes and his stomach; when the expression of his face was the most heavy and dull, his pupil most dilated, and the appearance of his eye most glossy, he was proportionately affected with bulimia. He was at last suddenly attacked by paroxysms of vertigo, intolerance of light, difficulty in swallowing and speaking, so that he stuttered; and about every second day had apoplectic convulsions. All these symptoms remitted in a remarkable manner after (with the advice of a friend) drinking in despair a quantity of brandy. This circumstance confirmed Klencke in the opinion he had already formed as to the presence of polycephali or cysticerci in the brain, for he had learnt, both practically and by experiment, that alcohol acted as a poison to these two species of hydatids, and changed them into a hard torpid mass.

As, however, the symptoms again returned, the nitrate of silver was administered in doses of gr.  $\frac{1}{2}$  with manifest advantage. The bulimia was relieved together with the tremor of the hands, the convulsive action of the eyelids was also removed, and the expression of the countenance improved. The remedy was discontinued in about a month as the skin began to be discoloured.

Our author then lost sight of the patient for two months. During that time various remedies which we need not enumerate were administered. On again seeing him Klencke found his countenance sunken and distorted, and the sense of smell in the right nostril lost; he stuttered much, the limbs trembled yet were not paralysed, the tongue was tremulous and drawn to the left, and his digestive powers were at a minimum. He died suddenly in convulsions.

*Post-mortem appearances* forty-eight hours after death. A large mass of hydatids consisting partly of acephalocysts, and partly of false hydatids were found between the pia mater and arachnoid; along the *fair cerebri* there was a mass of them as large as a cocoa-nut. The pia mater in the ventricles and choroid plexus was covered with numerous hydatid masses, the third ventricle being filled with them. The right foramen was distended to the size of a kidney-bean by a number of acephalocysts attached to organized fibrine; the right corpus striatum was interpenetrated by acephalocysts the size of peas, so that the olfactory nerve was compressed, and atrophied to such an extent that as it lay on the under surface of the anterior lobe it appeared to be no thicker than a thread. The thalamus was so distended with acephalocyst hydatids that it was pressed forwards and obliterated the *tænia Tarini*, (*tænia semicircularis*?) while the lateral choroid plexus appeared like a string of pearls pressed into the thalamus from the same cause. The left lateral ventricle contained serum, and the plexus numerous small millet-like cysts resembling false hydatids. The cerebellum was quite free from the entozoa, but in the

corpora olivaria and corpora pyramidalia, besides echinococci there were seventeen distinct cysticerci. The corpora quadrigemina were distended with an elastic cyst containing serum and a few acephalocysts, so that their outline was destroyed, particularly posteriorly, from whence a knot of acephalocysts ran into the left crus cerebelli. The crura cerebri and pons were free from hydatids; and there were no traces of softening in the brain, but at the points examined, it presented an opal-like colour. No hydatids were found in the spinal cord except on the fascia dentata. Numerous groups of acephalocyst hydatids and a few cysticerci were scattered through the lungs, but most numerously in the left upper lobe. Fifteen cysticerci were found in the heart, principally in the septum and around the origin of the pulmonary artery. Acephalocysts, echinococci, and cysticerci were disseminated through the liver and spleen. Acephalocysts studded even the mesentery and the peritoneal coat of the gall-bladder in great numbers. The kidneys were healthy, but a few cysticerci were found in the muscles of the back.

Klencke observes upon this case, firstly, that it was remarkable what extensive changes had taken place in the brain—masses of hydatids irritating and displacing important organs—with comparatively little disturbance of the nervous system. This he explains by the gradual and imperceptible nature of the morbid process. Secondly, that in the brain and the serous membranes the acephalocyst hydatids predominated, while in the spleen and liver, the echinococci were most numerous. This he notices as confirmatory of some of his experiments subsequently detailed, and of an opinion he had formed that the liver was the primary seat of the hydatids, and their appearance in the brain secondary. Thirdly, although the liver and spleen were loaded with the entozoa, no signs of their existence there were observed during life.

*Hydatids in the spinal cord and nerves.* Every species of hydatid have their habitat in the spinal cord and nerves, and may cause a corresponding disorder of function. Klencke has often detected encysted acephalocysts, echinococci, and cysticerci in particular nerves, causing a neuroma hydatidosum, and inducing atrophy.

*Hydatids in the liver.* The liver as a highly vascular organ is often the seat of hydatids, for they are commonly to be found where the vascularity is greatest. They are never seen when the capillaries are few, a proof that their ova are carried into organs with the circulation. At the commencement, the hydatides spurizæ are situate between the microscopic aggregates of the hepatic cells. The primary cells near to false hydatids have yellow corn-like contents, while those of the hydatid contain only clear or yellowish fluid with from two to three blastidia. The acephalocysts are also situate at first between the primary hepatic cells, but they subsequently excite capillary congestion and effusion when a general cyst is formed. The cysticerci are generally found singly or in groups, and always near the blood-vessels. They appear to avoid the hepatic cells which are filled with a saffron-coloured matter, and our author has found that the bile behaves to them as an active poison.

Klencke states that these parasites get into the blood directly through the veins, particularly when the general cyst gives way after inflammation of its membrane. He further states that in many cases, he has found



hydatids of all kinds swimming in the blood, either singly, or in groups of three or four. The cyst will open into a gall-duct, and then either the bile poisons the contained entozoa, or they pass along it into the bowels where they either fix again or are evacuated with the feces. The cheesy matter found in the liver in connexion with an earthy or cartilaginous deposit as a sequel of hydatid inflammation is simply a compound of proteine and fat, and never contains the ova or young of the animal.

Klencke proceeds to describe hydatids as found in the spleen, lungs, ovaria, arteries, and Fallopian tubes, in the testicles, kidneys, muscles, &c. The *cysticercus cellulosus* is usually found in muscles. Its favorite habitat is in the heart, and in the muscles of the back, tongue, and thigh; and is most usually observed in pigs. We however leave these to notice the

*Hydatids found free in the blood.* The capillaries are often found connected with a little bag filled with hydatids, the true nature of which cannot be ascertained on account of their minuteness, and there is often an interruption or rupture of the capillaries at the point where they are found. This circumstance in addition to another, namely, that hydatids are principally found in tissues rich in blood-vessels, led Klencke to form the opinion that the animals entered the system by means of the circulation. The discovery made by our author that they propagate as other animals by ova, is not only favorable to this idea, but at once sets aside the opinions of Cruveilhier and others as to the spontaneous origin of hydatids.

The microscopic bodies noticed occasionally in fresh-drawn blood, and which are at least foreign to it, cannot be positively described as hydatid ova. The blood of a man who had acephalocyst hydatids in almost every organ, as well as in the cellular tissue, was examined by Klencke, and he found in it small cheese-like conglomerations of cells, not unlike those he had observed in connexion with specimens of echinococci. Now acephalocysts are simply masses of ova of the echinococcus in an advanced stage of development, as has been stated already. Klencke therefore infers that the microscopic objects observed were really the rudiments of acephalocysts. But he has actually seen other species of hydatids in the blood. He found a *cysticercus* in the blood of the vena cava superior of a female, and an immense number of acephalocysts and echinococci in the splenic and portal vein of a person who had the liver and spleen affected with those entozoa. Further examples of this kind are as follows. In a vessel of the pia mater, a group of acephalocysts; in a capillary vessel of the conjunctiva of the upper eyelid an unencysted, well-developed specimen of the *cysticercus*; acephalocysts lying unattached in the cavity of the heart; an isolated large acephalocyst attached to the free margin of an aortal valve; encysted echinococci in the varix of a varicose vein in the leg of an aged female; acephalocysts in the blood evacuated from a tumour on the elbow: these facts show, in our author's opinion, that hydatids do really enter the circulation, and may block up the capillaries. As to the mode of entrance, there can be no difficulty, for often the hydatid cyst is in direct connexion with the mouth of a blood-vessel, nor is it at all impossible that they may make their way from the intestines into the circulation. If the facts be true, as stated by our author, (and we know not why they should be doubted,) it cannot be denied that hydatids do enter the

circulation, and that they should be considered as a true *contagium animalium*. Ova once in the circulation, we can readily infer with our author that they will be deposited most numerous in those organs where blood-vessels are most numerous, as the brain, liver, spleen, lungs; and that their first nidus will be a capillary too small in diameter for their transit. Here they will be developed and reproduced; here inflammation, exudation, and the formation of a cyst will take place; and from hence ova may find their way into the circulation, and be carried to other parts of the body.

*Origin of hydatids from without.* If there be no spontaneous generation of hydatids within the body, they must enter the blood from without, and consequently must have an external origin and existence. Man has no hydatid which is not found in lower animals; that they are not more numerously and frequently transferred by the flesh and milk of the latter to man is to be ascribed to the circumstance that the bile is an active poison to them. They are also passed with the urine, fæces, and saliva of animals. When Klencke discovered hydatids in mineral waters, and in the dung of an asparagus bed, he formed the opinion that hydatids existed in nature as other animals, and that they were to be regarded as the matter of a contagion. This opinion he has fully confirmed by his

*Experiments in Inoculation with the Ova of Hydatids. Hydatid spuria.* Two sucking whelps and two kittens were "handled" as follows; a fine trocar was introduced about half an inch below the navel into the abdominal cavity, and false hydatids introduced taken from a fresh human brain. The wound was carefully closed, and the young animals returned to their parent; after a quarter of a year they were examined (the wound having healed without any ill effects,) and in the two dogs and one of the cats a number of false hydatids were found around the cicatrix on the inner surface of the abdomen. In the other cat hydatids were found lower down close to the bladder.

A kid six days old, and a kitten, were the next subjects of experiment. False hydatids were taken from the infected animals just mentioned, and injected into the left femoral vein of the kid which was then restored to its parent for four months. The kitten had milk given to it poisoned with hydatid cells taken from the infected dogs. When the latter was dissected, no hydatids were discovered; the kid was however differently situated. When examined at the end of four months, two cysticerci fully developed were found between the skin and fascia of the right shoulder, contained in a cyst the size of a bean. In the upper part of the right lung, there was a cyst, four lines broad and nine lines long, in which together with exudation-cells and congestion-cells, there was a number of very small false hydatids. The surrounding structure had been changed by an inflammatory process. A sparrow was made to swallow lively hydatids from this source; in eight days it was opened, and a mass of hydatids found in the intestinal canal, amounting to a much greater number than those swallowed. A number of very small mother cells of the false hydatids were introduced into the orbital cavity of an old dog; in thirteen weeks they had multiplied so extremely as to alter the position of the globe of the eye.

A series of researches on other animals has led Klencke to the conclusion that inoculation with hydatid cells was only practicable with animals not too wide apart in the scale. Birds can rarely be inoculated from man, and amphibia never. But birds may be inoculated from inferior animals, and frogs from birds. He found that generally when the cells were injected into veins they stuck fast in the first organ they came to and were there developed. Thus when the splenic vein of a dog was made the medium of inoculation, the hydatid cyst was found in the liver. The carotid of an old goat was opened, and hydatid cells from the human brain introduced. The animal got well after the operation, and in a month was examined, when a series of hydatid cells were found in the corpus callosum, and in the optic nerves. Cells taken from the vesiculæ seminales of a man were injected into the uterus of a bitch. In nine months the post-mortem examination was made, and the organ was found full of hydatids. From this experiment Klencke very fairly infers that a female might be literally infected during coitus.

*Inoculation with acephalocysts and echinococci.* Klencke has found true acephalocysts in the milk of the cow. He found, by experiment, however, that the gastric fluid out of the body acted as a poison to the animal. Nine were given nevertheless to a cat in milk, and the animals were found in full reproductive activity, seated in the upper part of the ileo-colic valve. Several experiments are detailed analogous to those described in the last paragraph, which leave no doubt, if they be correctly stated, as to the facility with which these entozoa may be transferred from animal to animal. As the ova are not larger than from  $\frac{1}{100}$  to  $\frac{1}{800}$  of a line, they can readily pass along the smallest blood-vessels. And this explains why it has happened that when a part of the body has acquired a greater vascularity, as for example, after a blow on the eye, a hydatid has been developed. Klencke made some experiments on this point. He injected a fluid containing ova of echinococci into the veins of two dogs, two cats, and a guinea-pig. He wounded one dog in the tongue, another in the back, one cat he struck on the liver, and the other had the globe of the left eye squeezed. The guinea-pig was pinched on the thigh until it was black and blue. The guinea-pig and the cat with bruised liver showed hydatids when examined at the place of injury: in the others the experiment had no result.

Alcohol, iodine, bile, and urine, act as poison to these animals; but they suffer no change from antimony, arsenic, or mercury.

*Inoculation with polycephali.* The dimension of the reproductive germs of hydatids, as well as their relative fluidity, are of importance in determining their contagious power, because it is necessary that they enter the circulating system. Klencke made the following experiments to determine whether diffuent polycephali retained their vital power. He took hydatids of this kind, from the brain, placed them under a glass, and moistened them from time to time with a few drops of water. They dissolved into a slimy mass, which when mixed with serum became quite fluid. He inserted this fluid in the brain of a whelp and an old cat, in the mucous membrane of a he-goat, in the femoral veins of three young dogs, and he gave some of it in milk to two young cats. These experiments were performed in the presence of several friends. In eight weeks the animals were killed and in-

spected. In the brain of the whelp, at the wounded point, he found a *cænurus* (polycephalus) with a full-developed circlet and four germs. The old cat showed no traces of hydatids, neither did one of the cats to which poisoned milk was given, but in the left ventricle of the other he discerned a granular mucus, which was resolved by the microscope into cells and minute germs. In the he-goat, the right middle lobe of the brain contained a distinct polycephalocyst. Of the three dogs only one was affected. In this, a young *cænurus* with two cervical buds or germs was found in the fourth ventricle. Hot water is fatal to this species of hydatid.

*Inoculation with the cysticercus.* No hydatid is so easily communicable as this. Klencke has injected minute germs scarcely larger than blood-vesicles into the veins, and a brood of cysticerci in several organs of the body has been the result. Pork is often alive with them (*wimmelndvoll*.) The larvæ can make their way into the circulation by boring with their pointed head through the vessels. One experiment he relates is remarkably interesting. The blood of a sucking pig, newly killed, appearing, on a microscopic examination, to contain foreign particles, and having detected a cyst of cysticerci in the right ventricle of the animal, heart, as well as other parts of the body, he injected some of its blood into the veins of three cats. This was done in December, 1842, and two of the cats were sent to his friend, Director Helmuth, with a request that he would inspect them, which was done in the following May. In one which suffered from convulsive paroxysms resembling epilepsy, the convolutions of the brain were seen to be infected with cysticerci; in the upper part of the right lung of the other there was a solitary individual with a number of brood-cells. The third cat, kept by himself, pined away, so that it was necessary to examine it in February. An aneurismal dilatation of a branch of the pulmonary artery contained an unencysted group of cysticerci of various sizes, the largest of which contained ova.

*The therapeutics of hydatid formations.* Klencke found laurel-water to act as an active poison to the cysticercus. Other therapeutic agents possessing this property with regard to hydatids in general are camphor, ethereal oil of cubebs, acetic acid, balsam of copaiba, spirits of turpentine, ammonia, and the carbonates. Klencke found electricity to be a powerful destructive agent. He tried it clinically indeed on a man aged 54, who passed acephalocysts and echinococci with the urine. For this purpose he introduced one pole of a small galvanic battery through a glass catheter into the bladder; the other pole was sometimes applied externally to the abdomen, sometimes by means of a glass tube to the rectum, and sometimes to the lumbar region with the best results, dead hydatids being discharged about four hours after each application until they ceased altogether.

*Trichina spiralis.* A minute description of this parasite (now well known,) and several experiments are detailed elucidating its habits, and the facility with which it may be communicated from animal to animal. He denies that their habitation is in the voluntary muscles exclusively, as stated by Kobelt and Bischoff. He has observed them for the most part in men of hydropical or asthmatic constitution, but has never found that they interfered with the action of the muscles in which they were seated. The cyst containing them often appears to be an obstructed blood-vessel,

as its fibres can be traced into a still pervious canal, and is liable to petrifications—crystals of carbonate and lactate of lime, and even of silica, being deposited in it. This change is fatal to the worm, which also, when dead, becomes surrounded with earthy deposit, and leaves a hollow cast of itself in the latter.

This parasite remains lively after putrefaction has commenced in its residence: it is perfectly well when placed in fresh blood, and if dried up for several days, and then moistened with water, it is as vivacious as ever in a couple of hours. Klencke has no doubt that these parasites and their ova may and do exist out of the body. The ova are extremely minute, and can pass through very fine blood-vessels.

*Distoma hepaticum*. Klencke has ascertained that the structure usually considered as the ovum of this animal is, in fact, a cyst containing ova. These ova are cells so microscopically minute as to be able to pass along the smallest capillaries. The liver of the sheep is seldom free from them: only two were so in twenty-one that Klencke examined. They are also to be found in other organs, as the mammary glands, thymus, &c. It appears probable that the distoma passes through two or three stages of development, and that one of these stages at least is completed externally to a living organism—that, in fact, the animal returns to a living body to deposit its ova. The distoma may be dried without destroying its vitality.

*Intestinal worms*. The general results of Klencke's researches into the habits of this class of entozoa are as follows. They all produce ova, which are excreted with the fæces. These ova are developed externally to the body, taking up their abode either in their native excrement, or in ditches and pools of water. Being metamorphosed, they then return to the living organism, not by means of the alimentary canal, but through the blood, entering the circulation, and being deposited in various organs, from whence they make their way to the intestinal canal for the purpose of reproduction. The entozoon is guided to this point by the sexual instinct, as a suitable nidus for its ova, just as we find the cestrus and other insects selecting particular sites in animals whereon to deposit their ova.

Klencke has found entozoa in the blood of fishes, frogs, various mammals, and man, between which and animalculæ found in stagnant waters neither himself nor his friends could detect any difference whatever. These animals possess the faculty of passing through porous substances by means of their pointed head, or else bore through them with their spine-like tail. They are of various sizes, sometimes equalling in length the diameter of a blood-vesicle, sometimes one tenth of a line, a difference of size indicating a difference of genera or species. They all have an ovary, and the larger contain within them smaller animalculæ, varying in no respect (except in size) from themselves.

Various questions naturally arise in considering the natural history of intestinal worms. Are they and the animalculæ above referred to identical? Are those found in the blood developed into adult worms, and those found in stagnant water developed from the ova of these worms? The ovaries of the hematoidea (ascaris) contain about fifty millions of ova: what becomes of all these germs of animal life? How is it that only ova and adults are found in the intestines? To resolve these questions Klencke instituted a series of researches on—

*The development of the ova of the hematoidea (ascaris).* Our author took a quantity of mucus which a child, aged 5 years, had evacuated per anum, and which he found to contain an immense number of ova of the ascaris, and he disposed of it thus: he mixed it with sand and rain-water in a small vessel, covered it over with a porous cover, and then placed it in a flower-pot filled with earth, leaving, however, the surface exposed. At five successive periods of from fourteen to twenty-one days, he examined the ova of five pots thus prepared, with the following results. The first showed the ova somewhat larger; in the second small embryos were seen coiled up: some of these were introduced into the peritoneal cavity of a whelp. The third pot was a failure, on account of its contents having dried up, from its too great porousness. In the fourth the mucus and ova had disappeared, and there appeared a great number of small worms from  $\frac{1}{100}$  to  $\frac{1}{50}$  of a line in length: they moved somewhat. An ovary could be detected in them, and they all had a sharp lancet-shaped tail, which they seemed to use as a borer. A fluid containing as many as possible of these animals was injected into the femoral veins of a kitten and a frog. The fifth and last pot was a blank—nothing was to be seen but the dry remains—the spolia opima of those in the fourth pot, their short, lancet-like tails were alone distinguishable. Klencke supposes that they died from being confined in the pot, and being thus prevented migrating to a locality suitable as regards food, &c. to their new stage of development,—just as tadpoles would have died under similar circumstances.

The whelp that was infected from the second pot showed no results; but the case was quite different with the frog infected from the fourth pot. To our author's great delight, three days after the operation he saw thread-like worms, measuring  $\frac{1}{100}$  to  $\frac{1}{150}$  of a line in length, circulating with the blood through the vessels of the web of the foot. He watched them by the hour, and could have no doubt whatever as to their identity with those he had previously injected into the femoral vein. He also found them in blood taken from the frog, and numerous cysts containing the animal were found in various organs—in the peritoneal cavity and beneath the peritoneum of the liver, spleen, in the large vessels, the substance of the heart, &c. Klencke argues that the nature of the frog, although not unpropitious to the life of the animal, was not so favorable to its proper development as the body of a mammal would have been. He therefore took a number of these thread-like worms from their cysts in the frog, and mixed them with fresh-drawn blood from a dog. Having ascertained that they were lively in their new medium, he injected the blood into the femoral vein of a dog, and in six weeks made a post-mortem examination of the animal. No traces of the worm were found in the blood, but a number of cysts, like those observed in the frog, were distinctly discernible beneath the peritoneal covering of the small intestines. Some were empty, but having a minute opening corresponding to the intestines, and the latter contained a number of ascarides about an inch in length. But what was most remarkable, a small thread-like worm was discerned beneath the mucous membrane of the intestine, its lancet-like tail bent into a curve.

Ascarides are remarkably tenacious of life. If they be dried, moisture revives them; or if only a portion of the dried worm be moistened, that

portion will move. Even ascarides hardened in alcohol will revive when put into water. The ova of the bothryocephalus are equally as tenacious of vitality: pomegranate bark is poisonous to the adult, but has no effect on the ova.

There are two species of bothryocephalus, namely, *B. latus* and *B. punctatus*. The latter is unfrequent in the human subject, but common in the cottus scorpius. The *B. latus* has an ovary and vagina in each segment, and 700 testes, the connexion of which with a penis Klencke states he has in some instances been able to trace. Connected with these there are about 1600 glands, their ducts uniting into two common ducts, which are in immediate relation with the ovary. In the *B. punctatus*, the openings on one side are male, and on the other female. The animal is adherent to the appendices pyloricæ of the cottus, and just below the pylorus in man it undergoes changes according to the season, all the segments being detached from the head and thrown off at the commencement of winter, and each containing thousands of ova. New segments are formed, but the sexual organs are not developed in these until the spring. The segments are of course hermaphrodite and impregnate themselves, as in fact has been distinctly observed. Klencke very naturally inquires the fate of the multitudes of the ova excreted from man and animals. He attempted to perform the experiment with them, which he successfully practised with the ova of the ascarides, but without result. He gave the ova to dogs in food, and injected them into the veins. The worm was reproduced in the animal by the former means, but not by the latter.

The *tænia solium* is viviparous, that is to say, the ova are developed into small *tæniæ* within the ovary. These young microscopic animals can live out of the body. Klencke kept some in water alive for fourteen days; he then dried them, and restored them to life by moistening them. He has accidentally discovered them in ditch water, and a friend assured Klencke that he had detected the same animal in the water of Vienna. The *tænia* ought therefore to be endemic in that city; and this appears to be the case. (Vide our review of Dr. Wawruch's work on the *Tænia*, vol. XVIII, p. 324.) Klencke gave some of the small *tæniæ*, which he dried and brought to life again, to a cat and a lamb; in both adult entozoa were developed. The microscopic *tæniæ* have a lancet-shaped head adapted to the duty of piercing animal membranes, and he supposes it is by the use of this that they get into the intestines of the human foetus.

The natural history of the *tricocephalus* and *oxyuris vermicularis* has not as yet been investigated by our author, but he remarks that he has detected microscopic examples of the *tricocephalus dispar* in the ditch water of a moor, and thinks it probable that like ascarides and *tæniæ*, this animal also passes through a stage of development externally to the organism.

We have now placed a full and fair account of Klencke's views before our readers, and although we cannot but think that many of his experiments are inconclusive, it is clear that the general results at which he has arrived warrant us in recommending them to the notice of practised microscopists.

## ART. X.

*Samuel Thomas von Soemmering, Lehre von den Eingeweiden und Sinnesorganen des menschlichen Körpers.* Umgearbeitet und beendigt von G. HUSCHKE.—*Leipzig*, 1844.

*Samuel Thomas von Soemmering's History of the Viscera and the Organs of Sense in the Human Body.* Edited and completed by G. HUSCHKE.—*Leipzig*, 1844. 8vo, pp. 950.

THIS is the fifth volume of what is called the new edition of Soemmering's great anatomical work 'Vom Baue des menschlichen Körpers.' The name is rather inappropriate, seeing that in all the seven volumes there is not above one page in a hundred in which Soemmering could recognize a passage of his own. It is neither more nor less than a great and admirable system of anatomy worked out by Bischoff, Henle, Huschke, Theile, Valentin, Vogel, and R. Wagner; each of whom has taken that department for which his chief studies peculiarly fit him, and of whom all those whose volumes have yet appeared seem to have entered into a honorable rivalry for preeminence. The result has been the production of a series of anatomical works with which, taken as a whole, none yet published can compete. The merits of the several volumes that were published previous to this are different; but in kind rather than in degree. Those of Theile on the Muscular and Vascular Systems are models of treatises in practical anatomy; every description appears to have been written in the dissecting-room, and to have been again and again compared with fresh dissections. There is besides, a genuine dryness about them, characteristic of the sound practical anatomist; and yet in the very dryness a tone of enthusiasm and of love of certainty, such that one might vow the writer went to his work with a thorough affection for it. Time after time, when other books, good systems too, and monographs, have been unclear or silent, Theile has told us all the truth; and not less often has he indicated things repeatedly overlooked, yet certainly to be found if only looked for in his fashion.

The merit of Valentin's volume on the Nerves is scarcely less. In most parts, especially in all that relates to the descriptive anatomy of the cranial nerves, it leaves very little to be said; its minuteness of description is carried to the very furthest point, and, with an apparent contempt for degrees of importance, filaments hardly visible are honoured with half-pages for their histories. All this merit of minuteness it has pre-eminently; but in its tediousness of style, its frequent obscurity, its divisions and sub-divisions of chapters, sections, paragraphs, its vain pretences of indications and references by all the forms of numerals, signs, and letters, Greek, Arabic, and Roman—it is overwhelming. Happy is he who has no need to study more than one page in one long sitting.

The contrast is complete between Valentin, and either Bischoff or Henle. The volume of the former on Development, and that of the latter on General Anatomy, are certainly, both in style and in contents, nearly faultless. All that is known on either subject they tell in the most agreeable form and manner.

This present volume by Huschke is the first of the series which appears to us to possess not only a different kind, but a less degree, of merit than



the others. Long it is, and dry, very dry ; but its dryness is not, like that of Theile's volumes, from simple accuracy and minute detail, nor, like Valentin's, from the descriptions of things exceedingly and almost uninterestingly minute ; but rather because things quite obvious and commonplace, external shapes and outlines, and old-fashioned names and notions, and weights and measures, and mere sketches of superficial and imperfect physiology, are introduced in unnecessary profusion, while much of really minute anatomy and good modern physiology is omitted. We read on, page after page, and not a passage arrests attention ; as for the anatomy, we feel as if we had read it nearly all before, in Haller or Malpighi, or for some of the best of it, in Hildebrandt or Cloquet ; and, for the physiology, it is like that of answers to examination papers, thin, slippery, and incomplete.

The exceptions to this rule, the parts of the volume which are really new, are not such as to alleviate the faults. They consist chiefly of the absolute and relative weights and measures of the several organs in children of various ages under eight or ten years old, and in fœtuses near the end of gestation. With these also are many new estimates of the dimensions and weights of viscera, &c. in the adult. Thus :

"The kidneys of the new-born child, though absolutely much lighter than in the adult, are yet in proportion to the whole body much heavier, inasmuch as the weight of the two kidneys is to that of the whole body of the infant, as 1:82—100, in the adult in the relation of 1:225. They therefore do not grow uniformly with the rest of the body, although the secretion of urine becomes more energetic after birth. The absolute weight of a kidney in the new-born child is 6—10—15 grammes [French ? of 15·5 grains each ?] in a child 7 or 8 days old, the left weighed 20, the right 18 grammes ; in one 3 weeks old, the left 13, the right 12 gr. ; in one 6 weeks old, the left 17, the right 15 gr. ; in one half a year old, the left 16·95, the right 15·5 gr. ; in a girl 2 years old, the left 31, the right 29 gr. ; in a boy 3 years old, the left 43, the right 44 gr. ; in one 3½ years old, the left 49, the right 55 gr. ; in a girl 6 years old, the left 48, the right 41 gr. ; in a boy 8 years old, the left 80, the right 68 grammes." (pp. 345-6.)

Such is the character of what is especially new in this book. Facts of this kind give it value ; they are not to be found elsewhere, and they may, some day, be usefully employed ; but they do not compensate for the absence of facts of more interest than they themselves possess.

Similar facts to those just quoted are collected for nearly all the important viscera. We cannot quote them all, but for further examples, as well as because any truths relating to these organs are rare and interesting, we will give the general summary of what in this regard is said concerning the vascular glands.

"The absolute weight of the spleen, and its weight in proportion to that of the whole body increase rapidly after birth ; and its proportionate weight soon attains its highest standard, so that in the adult it has no decidedly greater proportion to the body than it has after birth ; nay, in some cases it even decreases. It varies between 1:235 and 1:240. But its relation to the weight of the liver is proportionally greater in the adult than in the infant. Before and within three days after birth, the weight of the spleen was found to bear proportions to that of the liver, varying between 1:49 and 1:12·8 ; but in six adult men the proportions were, in three of them as 1:6 ; in one as 1:10 ; and in two, as 1:11. . . . I found moreover, in these cases, an increase of weight in nearly an equal proportion to the increase of the body, especially in the first periods after birth." (p. 185.)

"After birth the thyroid gland diminishes. I found in the new-born child its proportion to that of the body to be as 1:400—243; after three weeks, the proportion was 1:1166; and in the adult as 1:1800. Its vessels also decrease after birth, as Meckel first observed. In old age its tissue becomes harder, &c." (p. 299.)

"The development [?] of the thymus gland after birth, is in so far remarkable as it is one of the few organs which die after birth. It belongs almost exclusively to the fœtus and the first periods of childhood. In the mature fœtus it weighs about 4 drachms; but in the child it weighs only 1. It goes on indeed to grow after birth; but, in proportion to the rest of the body it decreases. I found its weight in proportion to that of the body, in two fœtuses of eight months, as 1:221·428, its weight being 2·8 grammes.... in a mature male fœtus as 1:358·45, (its absolute weight 53 grammes); in a girl just born as 1:220·461, (its weight 13 grammes); in a boy 3 days old, as 1:340, (its weight 5 grammes); in one 9 days old, as 1:554, (its weight being 2·7 gr.); in one 3 weeks old, as 1:675, (its weight 3·6 gr.). Hence it is evident that its proportionate weight rapidly diminishes after birth. And soon it also diminishes absolutely. In a girl, 6 years old, it weighed only 1·45 grammes. .... Its specific gravity also gradually diminishes. It diminishes from below upwards; in the opposite direction, therefore, to that in which it is developed." (p. 305.)

"Even in the fœtal state, towards its conclusion, the renal capsules gradually diminish; and this decreasing proportion continues after birth. In new-born children I found them weigh about from 36 to 72 grammes; and their proportion to the weight of the body was between 1:475 and 1:705; while in the adult it is between 1:4800 and 1:10800. It is further known that in the fœtus the renal capsules are large in proportion to the kidneys. In eight months' fœtuses I found the weight of the former to that of the latter to be as 1:2 or 3; in new-born children as 1:3 or 4; after four weeks as 1:6; and in the adult as 1:14 or from that to 1:30. And this holds also in individual cases; so that the heavier the kidney the lighter in general is the adjacent renal capsule; and *vice versa*." (p. 361.)

#### ART. XI.

1. *Contributions to a Knowledge of the Influence of Employments upon Health.* 2. *Further Contributions to a Knowledge of the Influence of Employments upon Health.* 3. *A Third Contribution to a Knowledge of the Influence of Employments upon Health.* 4. *Health of Towns Commission. Minutes of Evidence given by William Augustus Guy, M.B. on the Influence of Employments upon Health.* By WILLIAM AUGUSTUS GUY, M.B. Cantab., Professor of Forensic Medicine, King's College, and Physician to King's College Hospital.

THE recent numbers of the 'Journal of the Statistical Society' have contained several valuable contributions to vital statistics. The papers of Mr. Chadwick and Mr. Neison have already been noticed on a former occasion;\* we propose in this place to give an abstract of Dr. Guy's essays, on the important subject of the influence of employments upon health, with which we shall combine what appears to be their complement, the Minutes of the Evidence on the same subject given before the Health Commission, and already cursorily noticed in our review of their recently published volume.

The essays before us, contain no less than forty-five elaborate tables, besides a sheet of illustrative causes; they may be fairly expected, therefore, to display some new facts, and to suggest some considerations of

\* British and Foreign Medical Review, vol. XVIII, p. 197.

interest to the medical man as well as to the public. We shall endeavour to exhibit the principal results without the aid of tables, and we shall, for perspicuity's sake, adopt an arrangement differing from that which the author has employed.

The materials for the essays have been obtained from two distinct sources; the mortuary registers of the metropolis for 1839, and the out-patient books of the King's College Hospital. The evidence laid before the Health Commission is based chiefly upon a personal inspection of the workshops of the metropolis, especially of the printing-offices. We shall state the results derived from each of these sources in turn, beginning with those from the mortuary registers.

The average age at death of different classes of the community, is a point of much interest which has already been amply illustrated by Mr. Chadwick in his valuable Sanitary Reports. From one of Dr. Guy's tables, contrasting the three classes of gentlemen (including professional men), tradesmen, and artisans (including the entire labouring class), it appears that the average age attained by gentry and professional men is little short of 59 years, while the tradesmen live only 49, and the labouring class little more than 48. These averages are formed from the deaths occurring at 15 years of age and upwards. The greatest age attained by members of the first class was 98, it was 97 in the case of tradesmen, and 101 in the case of the labouring class.

The great difference between the average age of the first class and of the last two classes, and the very slight difference between that of tradesmen and the labouring class, are equally worthy of observation. As all deaths taking place in workhouses among persons whose occupations are not stated are omitted, and as it is probable that the greater number of such persons belong to the labouring class, it is obvious that the average is merely an approximation. It is also below rather than above the true average, as the mean age of adults dying in workhouses is as high as 60 years. On the other hand, it must be borne in mind that a certain proportion of the class of tradesmen, especially the petty tradesmen, originally belonged to the labouring population, and had been for a part of their lives submitted to the influences, whether injurious or otherwise, to which the labouring population is exposed. If allowance were made for both these disturbing causes, it is probable that the average result would not differ materially from that just stated: the tradesmen and the entire adult labouring population would be found to be in nearly the same sanitary condition, while the lives of the adults of the more favoured classes, taken one with another, would be lengthened by about a fifth of the mean duration of life of the adult trading and labouring population.

The influence of different classes and kinds of employment, and of one baneful habit, that of intemperance, is examined in a series of elaborate tables. The effect of in-door as contrasted with out-door occupation, is the first object of inquiry. It appears that the average age at death is lower in the first class than in the second, being in the one case 47 years and in the other 49 years; that the deaths under 30 in the one class form nearly 22 per cent. of the total deaths, and in the other only 17 per cent., and that under 40 years of age the per centage proportions are respectively 39 and 34 per cent. In-door employments, then, are evidently much more

injurious to health than out-door occupations; all in-door employments, however, are not unhealthy in an equal degree. This is shown in a table in which the several in-door employments are grouped according to the amount of exertion which they require, the first group consisting of those requiring little exertion, the third of those demanding great exertion, while a second group combines all those requiring an intermediate degree of exertion. In the first group the mean age of death is, in round numbers, 47 years, in the second and third 48 years; but those employments requiring great exertion exhibit a somewhat lower average age at death. The greatest age attained (101 years) is in the second class, the lowest, less than 90, in the class requiring great exertion. The maxima for the three classes in the order in which they have been named is 98, 101, and less than 90. The deaths under 30 in the three classes are inversely as the amount of exertion; being in the sedentary class 24 per cent., in those using great exertion 19 per cent., and in those using still greater exertion 18 per cent. Under 40, the deaths for the three classes respectively are 40, 37, and 34 per cent. The general result which may be deduced from this table then is, that in men employed in-doors the average age of death is lower as the amount of exertion is less; but that the greatest age is attained by men using moderate exertion, while those using little exertion attain a greater age than those using great exertion. To put this statement into its shortest form—sedentary habits are unfavorable to health and long life in the many, but favorable to longevity in the few; on the other hand, strong exertion is more favorable to health but less favorable to longevity. A moderate degree of exertion is most favorable to the attainment of old age. It would appear, too, that the habits of the labouring class, though on the whole less favorable to the health of the entire class than the condition of the gentry or tradesmen, is more favorable to longevity. The most remarkable examples of longevity have also occurred in that class.

The injurious effects of habits of intemperance are strikingly displayed in a table contrasting the age at death of men exposed to the temptation of drinking, with that of men following similar employments, but not unusually open to such temptations. The most accurate and unexceptionable comparison is that between the drayman and the labourer. The average age of the former is 43, that of the latter 47½ years. The greatest age attained by any of the former class is less than 90 years, while 98 is the maximum in the case of the latter. In the interval from 30 to 40, as many as 39 per cent. of the draymen die, but only 18½ per cent. of the labourers. Though no additional proofs of the fatal effects of intemperance were required, it may be well to put on record this strong confirmation of a familiar fact.

Such are the *most interesting* results of the tables founded upon the ages at death, irrespective of the cause of death. Another and more lengthened series of tables illustrates the influence of similar conditions and modes of life on the production of pulmonary consumption, the principal fatal disease of the adult.

The relative liability to consumption of the gentry, tradesmen, and labouring men is shown in a table which presents at a glance the percentage proportion of deaths at different ages, the average age at death,

and the ratio which deaths from pulmonary consumption bear to those by all other diseases. The per centage proportion of deaths occurring under 30 in the three classes, in the order in which they have been just named, viz. the gentry, the tradesmen, and the labouring men, is 29½, 33, and 31. Under 40 the numbers are 56½, 60, and 57. The average ages are 39, 38, and 38½; and the ratios of deaths by consumption to those by all other diseases are respectively 1 to 5, 1 to 2½, and 1 to 2½. The two classes of tradesmen and labouring men, therefore, are nearly twice as liable to attacks of pulmonary consumption as the class of gentry, and the difference between the first two classes is very trifling. In respect of the average age at death, and the per centage proportion of deaths under 30 and 40 years of age a curious circumstance is observable, namely, that the tradesmen who die of consumption die at an earlier age than the gentry or the labouring class; the cause of which will presently appear. The comparative liability to consumption of the in-door and the out-door labourer is shown in a table corresponding to the table of deaths from all causes. The per centage proportion of deaths from consumption is much higher in the first than in the second class, the numbers being—in-door 37½, out-door 25: under 40 the numbers are—in-door 61, out-door 53. The ratios of death from consumption to those by all other diseases are respectively 1 to 1·98, and 1 to 2·56, or in round numbers 1 to 2 and 1 to 2½.

The deaths from consumption among men working in-doors, are greatly influenced by the amount of exertion. Thus while 44 per cent. of men following sedentary occupations die of consumption before 30 years of age, 31 or 32 only of those using greater exertion fall victims to that disease before the same age. The numbers dying before 40 are respectively 66 per cent., and 54 or 55.

We have already drawn attention to the fact that the tradesmen fall victims to consumption at an earlier age than the gentry, or the labouring class. It appears from another table that they occupy a middle place between in-door and out-door labourers, and between men following sedentary occupations within doors, and those using greater exertion in their in-door employments. The following comparisons will make this more clear: Deaths under 30:—in-door labourers 37½, tradesmen 33, out-door labourers 25; in-door sedentary 44, tradesmen 33, in-door requiring great exertion 31½. By thus dividing the whole labouring class into two groups, the cause of the earlier liability of the tradesmen to consumption becomes obvious. The entire labouring class is more favorably circumstanced in this respect, because it includes a considerable number who either work out of doors, or following their employments in-doors, make use of strong exertion. The tradesman is confined during the entire day to his shop, and loses the benefit of the open air and exercise which fall to the lot of the out-door labourer; he uses little exertion within doors, and consequently suffers in the same way as those who follow sedentary occupations within doors. His sanitary condition is little more favorable than that of the tailor or compositor. The results obtained from the mortuary registers are borne out by a series of tables exhibiting the ratio of consumptive cases to those of all other diseases, and the age at which consumption has made its attack, among the out-patients of the King's College Hospital. The

ratio among men working in-doors is 1 to 3·81, among those working out of doors 1 to 4·13. For men working in-doors and using different degrees of exertion the ratios are: sedentary 1 to 3·08, more exertion 1 to 4·44, great exertion 1 to 5·06. The numbers attacked under 30 are as follows: in-door 51 per cent., out-door 36 per cent.; sedentary 51 per cent., more exertion 53 per cent., great exertion 49 per cent. Under 40 the numbers are still more uniform. They are as follows: in-door 83 per cent., out-door 62 per cent., sedentary 81 per cent, more exertion 80 per cent., great exertion 67 per cent. These results, in the case of in-door and out-door occupations, are fully confirmed by tables comparing the cases of consumption occurring among females following these two kinds of employment.

The unhealthiness of occupations requiring little exertion, as compared with those demanding greater efforts, is exemplified in the case of the compositor as compared with the pressman. Both work in rooms similarly warmed, and equally ill ventilated, and both breathe the same atmosphere, but the former uses little exertion, and the latter much. The ratio of consumptive cases to those of all other diseases among compositors is 1 to 3·47, and among pressmen 1 to 5·12.

It is but natural to suppose that employments which are unfavorable to health should number a greater proportion of young persons than more wholesome occupations. This accordingly is found to be the case, and the degree of difference is shown in a series of tables. This disproportion in the age of men following more or less healthy occupations is used by Dr. Guy as a concurrent probability in support of the conclusions drawn from the tables of diseases and deaths. It is obvious, however, that this test is a fallacious one, for the ages may be influenced by other causes, as by an increased demand for young persons in one class of occupation as compared with the other. Take, for instance, the compositors and pressmen. It appears from Dr. Guy's tables, that the average age of compositors is less than that of pressmen. Does this necessarily result from the occupation of the compositor being more fatal to life than that of the pressman? There is only one way in which this question can be satisfactorily answered, and that is by ascertaining the existing age of several men following both occupations and beginning them at the same age, and then comparing the average age of the two classes. This comparison Dr. Guy has instituted on a limited scale, and has laid the result before the Health Commission; and it appears that when compositors who began to work as such at 14, 15, and 16 years of age, are compared with pressmen beginning their work at the same ages, the mean age of the one is 28 years, that of the other 34 years, showing a loss on the part of the compositor of 6 years. A similar result is obtained by comparing the two classes beginning their employment at the ages of 14, of 15, and of 16 years—the difference in favour of the pressmen being 3, 10, and 8 years respectively. The greatest age attained in the case of the pressmen is 60, and in the case of the compositors 72. This corresponds with what has been already remarked, that sedentary occupations are favorable to longevity, while those requiring stronger exertion yield, so to speak, a better average result.

There are many other facts established in these essays, and illustrated

by tables which our space will not allow us to notice at any length; we shall, therefore, content ourselves with extracting from the second essay the author's summary, making such slight additions from the third essay as will render that summary complete. A comparison of in-door with out-door occupations leads to the following results:

1. The ratio of cases of pulmonary consumption to those of other diseases is somewhat higher in persons following in-door occupations, than in those working in the open air; and this rule applies to both sexes. It also holds good with regard to the deaths from consumption as compared to those from all other diseases.

2. Pulmonary consumption occurs at an earlier age in men following in-door occupations than in those following out-door occupations. The same rule holds good with regard to the deaths from consumption.

3. The probable excess of cases of pulmonary consumption in men following in-door occupations (for a higher ratio of consumptive cases in those employments is merely a strong presumption in favour of such excess,) and the earlier age at which consumption makes its attack, would naturally tend to fill this class of employments with a greater number of young men, as well as to occasion a higher mortality at the early periods of life, and a lower average age of death. Accordingly, among those employed within doors, there is an excess of young persons, a higher mortality in early life, and a lower average age of death. The greatest age, as it happens, is the same in the two classes.

The classification of in-door employments, according to the amount of exertion which they require, leads to the following results:

1. The ratio of cases of pulmonary consumption to those of all other diseases is highest when the amount of exertion is least, and lowest when it is greatest; and the intermediate degree of exertion presents an intermediate ratio. The same statement holds good in respect of the deaths from consumption compared with those from other diseases.

2. The age at which consumption makes its attack, and at which it proves fatal, is earlier in employments requiring little exertion than in those requiring more exertion, and in those requiring moderate exertion than in those demanding great effort.

3. The per centage proportions of men under 40 years of age following these three classes of employment is in strict accordance with the ratio of consumptive cases, and the ages at which consumption makes its attack and proves fatal; these proportions following the exact order of the degree of exertion.

4. The age of death, and the age of death from consumption also follows the same order, the per centage proportion of deaths under 40 being highest when there is least exertion, lowest when there is greatest, and intermediate when there is an intermediate degree of exertion.

5. The average age of death, also, is lowest when there is least exertion; but highest when the exertion is intermediate between the two extremes. The somewhat lower average obtained in the case of employments requiring great exertion, appears to depend on an excessive mortality under 20 years of age. The greatest age also occurs in occupations requiring a medium degree of exertion, the least maximum in those demanding the greatest effort.

6. In the class of in-door occupations, with varied exercise, (a class including the footman, waiter, &c.,) the ratio of cases of pulmonary consumption ranks next to that of the sedentary occupations, and the per centage proportion of consumptive cases occurring before 40, the per centage proportion of men so employed under that age, and the per centage proportion of deaths are higher than in any of the other classes, while the average age of death is lower. This class, however, stands alone, inasmuch as young men are in greater request, and old men comparatively little wanted.

7. The class of out-door occupations requiring moderate exertion presents a higher per centage proportion of deaths under 40, and a corresponding excess of young men; but the ratio of consumptive cases and the per centage proportion of such cases occurring under 40, are lower than in the class requiring greater exertion. This apparent anomaly may probably be explained by the fact that the attack of consumption is postponed till a later age in men following out-door employments, than in those working within doors.

8. The maximum age in the case of men following the more laborious out-door employment is lower by one year than in those using less-exertion, and in the latter there is a considerable excess of aged men.

9. Sedentary employments, and those requiring little exertion, are more unfavorable to adult and middle age, but more favorable to old age, than those requiring greater effort; on the other hand, employments requiring great exertion are unfavorable to youth and longevity, but favorable to middle age. Employments requiring little exertion prove fatal by inducing an excess of cases of pulmonary consumption, those requiring great exertion by occasioning other diseases of the air-passages and lungs, towards the commencement of old age.

The following observations apply to certain occupations examined separately, and to the effects of intemperance:

1. The exposure to a high temperature does not appear to exercise any injurious influence upon health during the early periods of life; but, in common with employments requiring a great amount of exertion, it is unfavorable to longevity.

2. The inhalation of dust does not appear to be attended with the extremely injurious consequences which the high ratio of cases of pulmonary consumption would lead us to expect; but when compared with the aggregate of other out-door occupations, the employment of the mason is found to be, in some degree, less favorable to health and longevity.

3. Habits of intemperance appear to exercise a most injurious influence upon health; for men peculiarly exposed to the temptation of drinking present a high ratio of cases of consumption, a high per centage proportion of such cases occurring under forty, an excess of young men, an excess of deaths under forty, and especially between thirty and forty years of age, and a low average and maximum age.

Lastly. A comparison of the ages at death of gentlemen, (including professional men,) tradesmen, and artisans, issues in displaying the great advantage which the first class possesses over the other two, and the comparatively small difference which exists between the tradesman and the artisan. The average age of death of the first class exceeds that of the



other two by 10 years, while the average age at death of the tradesman exceeds that of the artisan only by a small fraction of a year.

Such are the chief results to which Dr. Guy's tables and reasonings lead him. The point on which he lays the greatest stress is the tendency of certain classes of employment to promote pulmonary consumption, the liability to this disease being taken as a sort of test and measure of the influence of employments upon health. Having confirmed the conclusions of other observers as to the tendency of sedentary occupations to promote pulmonary consumption, he endeavours to ascertain the cause of their unhealthiness by comparing persons using different degrees of exertion, but breathing the same air, as, for instance, the compositors and the pressmen, and he shows satisfactorily that the first class suffer more than the last. This may be explained in one of two ways—either by a want of proper exercise alone, such inertness being in itself injurious, or by the circumstance that comparative inaction increases the injurious effects attributed to hot and foul air. This latter alternative is the one towards which Dr. Guy evidently leans, and he supports his view by instancing the good health and long life enjoyed by literary men leading sedentary lives, but, unlike the artisans, breathing a pure air.

In the evidence given before the Health Commission, some very striking facts are stated illustrative of the injurious effect of a heated and foul atmosphere. Three several comparisons of a very precise kind, in which the state of health of men having different proportions of air to breathe was inquired into, agree in displaying the sad effects produced by the total neglect of ventilation. The most remarkable comparison is exhibited in a table which contrasts three groups of men having respectively less than 500, between 500 and 600, and more than 600 cubic feet of air to breathe. Among the first group  $12\frac{1}{2}$  per cent. had suffered from hæmoptysis, and the same number from frequent attacks of catarrh; of the second group only  $4\frac{1}{2}$  per cent. had spit blood, and  $3\frac{1}{2}$  per cent. were subject to cold; while of those having more than 600 cubic feet of air to breathe, less than 4 per cent. had had hæmoptysis, and less than 2 per cent. complained of a liability to catarrh. The subjects of the comparisons were letter-press printers.

Before we dismiss Dr. Guy's essays we must notice an interesting calculation or estimate which he has formed of the number of deaths from pulmonary consumption occurring in England, and of the probable waste of life which occurs in the metropolis and in the large towns.

The deaths entered yearly in the returns of the Registrar-general under the head of consumption, amount to little less than 60,000. Of these nearly a half occur at ages at which pulmonary consumption is acknowledgedly of rare occurrence. Thus, of 7282 deaths entered as consumption in the mortuary registers of the metropolis on the average of the two years 1840 and 1841, as many as 1560 occurred before fifteen years of age, and 374 after sixty years of age, leaving for the interval from fifteen to sixty only 5344 deaths. Many of the deaths under fifteen occurred at very early ages, and many of those after sixty at periods of life at which true pulmonary consumption is known to be extremely rare. Tubercular deposits in the lungs, it is true, are often met with in the bodies of children dying of other diseases, but death from pulmonary consumption among children is

known to be comparatively rare. In endeavouring to correct these evidently erroneous returns, Dr. Guy starts with the assumption that the number of deaths entered as consumption between the ages of fifteen and sixty, are a near approximation to the true number, and then proceeds to calculate the number which may be supposed to occur before fifteen and after sixty, by means of the deaths occurring at those ages in the London Hospitals during the year 1840. It is obvious that this mode of estimating the number of deaths from consumption is merely a very general approximation, which may require correction; but it is doubtless much nearer to the truth than the numbers given in the Reports of the Registrar-general. Adopting this mode of calculation, Dr. Guy reduces the number of deaths occurring annually in the metropolis from pulmonary consumption to 5560, and by means of a calculation, in which we do not think it necessary to follow him, he estimates the total annual mortality for England and Wales at very nearly 36,000. He estimates the mortality from consumption in the metropolis at one eighth of the deaths at all ages, and somewhat less than a fourth of the deaths occurring above fifteen years of age; and for England and Wales at less than one ninth of the mortality at all ages, and one in less than 6 of the deaths occurring above fifteen years of age.

The waste of adult life from pulmonary consumption in England and Wales, that is to say, the number of deaths from consumption which might be prevented if all classes were placed in circumstances as favorable as those of the higher orders and of the professions, is estimated at 5000 a year, and a strong opinion is expressed by our author that this number is much below the truth. The estimate goes on the supposition that the waste from pulmonary consumption occurs only in the metropolis and about twenty of the largest cities, and that the only class whose lives are thus sacrificed is the labouring class. The great liability to pulmonary consumption of the class of tradesmen shows that a large addition might be made from this source.

We have already made a brief reference to the results of Dr. Guy's inspection of the workshops of the metropolis, especially of the printing-offices, in which, as is well known, there is a lamentable neglect of ventilation, and where gas-lights, and some one or other of those economists of heat, but not of life, stoves, steam-pipes, and hot-water tubes, add to the closeness and foulness of the air. In the results of these comparisons, we have a striking confirmation of the facts detailed in the first part of this abstract, and a proof of a position which experiments upon animals, the experience of the directors of the zoological gardens, and the general impression of all men who have given the subject a thought, firmly establishes—that a close, foul, heated atmosphere is a sure though slow poison, of which the fatal effects have been long shrouded from public view under the name of consumption, and the more surely concealed inasmuch as the popular belief attributes that fatal disease to some peculiarity of climate which England possesses in an unusual degree. Many other points of interest are examined in the papers before us by the aid of large numbers of facts, or more cursorily alluded to. For these, the reader must be referred to the essays of which the titles are given at the head of this abstract.

We shall conclude by allowing the author to portray, in his own words, the spirit in which he has conducted his arduous inquiries :

"In all investigations of this nature" he says, "there is much room for error. Some standards of comparison essential to accuracy, are at present wanting. Causes and effects are so mixed up that it is impossible to separate them. The disease which, by destroying the adult, puts a younger man into his place, also alters the distribution of the population, so as to swell the number of its own victims; and thus all attempts at perfect accuracy are rendered abortive. Approximations confessedly imperfect, and estimates necessarily rude, must hold the place of those accurate results which force conviction. The author would therefore again guard against misconception. He has not dared to characterize his results as certain or accurate, but merely as approximations to truth, and probabilities more or less strongly confirming one another. His estimates are open to correction, and await that correction at the hands of himself or others; but he trusts that in the absence of that certainty of which he is in search, the probabilities he has established will serve the purpose of attracting attention to a part of the great subject of public health which has hitherto received comparatively little attention, and in conclusion, he may be allowed to express his own conviction, that the evils which have been pointed out are not exaggerated."

## ART. XII.

*Das Venensystem in seinen Krankheiten. Verhältnissen dargestellt von Dr. F. A. B. PÜCHELT, &c. &c. Erster Theil. Venöser Zustand. —Erhöhte Vernosität.—Leipzig, 1843.*

*The Venous System in its pathological Relations. By Dr. F. A. B. PÜCHELT, Privy Councillor, Ordinary Professor of Pathology in the University of Heidelberg, &c. &c. The First Part. The Venous State—Esalted Venosity.—Leipsic, 1843. 8vo, pp. 288.*

DR. PÜCHELT published the first edition of his work nearly a quarter of a century ago. Since that period he has had many opportunities of investigating his subject, and of confirming those truths he had previously stated, or detecting what was erroneous. The mature results of his discussions, reading, and observations are given to the public in this second edition, the contents of which we shall briefly analyse.

When the respiratory functions are interrupted the change of venous blood into arterial is also interrupted, and death follows. The conversion, however, may go on and may be partly completed; in this case, vital actions are only morbidly influenced in proportion as the change is imperfect. Dr. Püchelt devotes part of the first chapter to a consideration of the characteristics of the blood under these circumstances. His views are principally inferential. As carbonic acid gas is thrown off by the lungs from venous blood, if the process of decarbonization be interrupted, the arterial blood must necessarily contain carbonic acid and be deficient in oxygen gas. The same line of argument applies to aqueous vapour, and the excrementitious animal matter excreted from the pulmonary mucous membrane. The relative quantities of colouring matter, albumen, fibrin, and salts are also considered, and the facts stated by Andral, Schultz, &c. reviewed. Our author supplies, however, no additional knowledge, and his views are those which any one considering the subject would adopt.

The assimilation of arterial blood to venous from whatever causes arising, is followed by secondary changes. The blood itself circulates more slowly, and the lungs receive more to arterialize than their capacity will allow;

hence pulmonary congestion and a consecutive venous plethora from the consequent obstruction of the venous circulation through the heart. These react upon the arterialization of the blood, and its motion in the vessels, and thus the venous condition or excessive venousness (*erhöhte venosität*) is developed. The characteristics of this state are that the blood is moved slowly and is more venous; and the venous blood itself is in greater quantity.

This "venous state" is principally observed in hemorrhoids, gout, hypochondriasis, melancholia, abdominal infarction, &c. Dr. Puchelt gives a bibliographical history of this part of the subject, as well as of the more modern writers who have preceded him or adopted his views, and like most of his countrymen displays considerable literary research. The conclusion at which he arrives is, that the venous cachexy exists under two distinct forms, the one *erethistic* or active, the other *torpid* or atonic. The *erethistic* form is seen principally in young subjects of the choleric temperament, or with traces of the sanguineous, and occurs at the commencement of the venous state. It is characterized by venous turgescence, inflammatory dilatation of the veins, inflamed painful varices, "predisposition to actual inflammation," morbid sensations of a vivid and disagreeable kind which give rise to a peculiar form of hypochondriasis, a liability to spasm, to febrile and inflammatory diseases, and to critical discharges. After this state has existed some time, it passes into the torpid venous cachexy.

The torpid venous cachexy is observed principally in persons of the phlegmatic and melancholic temperament and in aged people, or occurs as a consequence of particular habits of life. It is essentially chronic; the venous turgor is passive and neither inflammatory nor painful, the perceptions dull, the movements slow. Nutrition is changed and morbid deposits in the veins and other organs are observed.

Between these two extremes there are many intermediate states. Indeed, the *erethistic* may alternate with the latter in the same individual; being excited either spontaneously, or from time to time in consequence of external causes, the attacks appearing at first in paroxysms.

In the second chapter Dr. Puchelt discusses the causes of the venous state in detail. These are arranged under thirty-two heads, namely, age, sex, hereditariness, temperament, diseases of the veins, heart, arteries, lungs, and lymphatic system, nervous affections, depressing passions, and exhausting intellectual labours; want of exercise, too much sleep, diminished excretions, the action of light, air, and atmospheric pressure, temperature, seasons, climate, dwellings, employments, miasm, &c. We need only observe that these various causes induce the venous cachexy in various modes. 1. They may obstruct the circulation of the blood mechanically. 2. The quality of blood may be increased either as a consequence of luxurious diet, or by diminished muscular action. 3. The motion of the blood may be rendered more slow, either from want of exercise, or by changes in its composition, such as occur when arterialization is imperfectly performed, when excretions are retained, poisons received into the system, &c.

The third chapter is divided into two parts. In the first, the pathological anatomy of exalted venousness is discussed. In the second, the changes in function, or the diseases of increased venousness are considered.

It is manifest that the circulation of imperfectly arterialized blood must give rise to various changes. Being less stimulant to the heart and arteries, it moves more slowly, and hence venous turgor and congestion, and consequent on these hemorrhages in various forms, inflammation, and altered nutrition of parts, giving rise to hypertrophy, induration, tubercular and cancerous disease, ossification, and the formation of biliary and urinary calculi, &c. These various changes take place theoretically in the order in which they are enumerated. Congestion is followed by hemorrhage or by venous inflammation,—the latter often an insidious disease, seeing that it may take place to a great extent in both the thoracic and abdominal viscera without any suffering on the part of the patient as is illustrated by the pneumonia and enteritis of aged persons. Venous inflammation is however as dependent on the morbid condition of the blood, as on its slower motion in the vessels; both circumstances, according to Dr. Puchelt, are necessary to its development.

The changes in the functions of organs induced by excessive venosity, or in other words, the diseases dependent upon it are numerous as the organs themselves. Thus, congestion of the brain and spinal cord are followed by the well-known morbid conditions—headache, sleeplessness, stupor, hemorrhagic and serous effusion on the one hand—venous trismus, tetanus and spinal irritation (*erethismus medullæ spinalis*) on the other. Both the special and common sensations are morbidly modified, and neuralgia, pruritus, hypochondriasis, &c. developed. In considering the impaired functions of organs *seriatim*, Professor Puchelt scarcely omits noticing any morbid state of the system. Lesions of motion of the sensitive nerves, diseases of the heart, arteries, and veins, various fevers, affections of the respiratory, alimentary and secreting organs, the skin, &c. are all reviewed, and found in some way or other to be dependent on “*erhöhte venosität.*” This part contains the most complete history of venous pulsation that we know of. The various gastric disorders known to English writers under the general term dyspepsia and comprising flatulence, cardialgia, colicky pains, constipation, &c. are all attributed to the venous state.

The remaining three chapters are devoted to the diagnosis, the course, termination and prognosis, and the treatment of the venous condition. Professor Puchelt introduces the fourth chapter on diagnosis with a disavowal of the hobby-horsical propensity which the reader of his book must necessarily attribute to him. He declares that if he be hobby-horsical, it is as a writer only, and not as a practitioner, appealing to his pupils as the witnesses of his conduct at the bedside of the patient. This we can readily believe. Few well-informed systematic writers (and certainly Professor Puchelt is of the number) are bad practitioners: the intellectual power which enables them to be the one, enables them also to be the other, unless indeed an enthusiastic temperament swamps both experience and common sense. In these four last chapters Professor Puchelt exhibits a thorough practical knowledge of the diseases of the venous state. The primary idiopathic and general venous plethora is known by the following signs. The cutaneous veins are turgid, full and firm, and the pulsæ full and slow, unless the heart be oppressed, when it is small and compressed. The face is bloated, turgid, but dark and livid; the temperature of the

body moderately increased. Palpitation, and sense of constriction, and difficulty of breathing are almost always experienced. The heart beats powerfully, the impulse being vehement, and the sound loud and clear, but in the highest degree of the affection, the stroke indicates that cardiac action is oppressed. The individual is fat and corpulent, the movements slow, the stools unfrequent, the vision disturbed. The age of the patient, his habits of life as to eating, drinking, sedentariness, &c. will also assist in diagnosis. In short, our author means to picture a short-necked, dinner-loving, puffing alderman, aged about 60.

When the blood is changed in quality, and approximates to the venous blood, (the venous blood itself being increased in quantity,) the symptoms are different. The veins are not turgid, and the heart and lungs are unaffected. The complexion is not livid, but muddy, dark, or of a dingy yellow, the urine high coloured, the bowels confined and the motions dark and tar-like, the abdomen contracted, the body spare, and the mind depressed. The appetite and digestion are little impaired, but the sleep is imperfect and often disturbed by incubus. In short, it is the man of melancholic temperament, the never-smiling, ever-thinking atrabiliarian.

In its purest form, the venous condition is highly chronic. After the exciting causes have been sufficiently long in operation various feelings of indisposition are perceived which do not amount to disease. These continue awhile, and are the premonitory signs of some distinct morbid state. The latter at length bursts forth, either as a paroxysm of gout, or as a gastric venous fever, or as abdominal or portal congestion, venous cardialgia, hemorrhoids, &c. Most of these affections, and particularly those which are distinguished by critical evacuations, exercise a remarkable and beneficial influence on the system, the patient feeling better than before, and even becoming fatter after the disease has declined. This improved state of health continues awhile, but the traces of the venous state remains and shortly its characteristics reappear. The premonitory indisposition is next perceived, and after this a paroxysm of actual disease with its critical discharge occurs, again to be followed by an improved state of health. Thus there is a continual cycle, or an oscillation at all events of phenomena—a sort of periodicity—the disease appearing to be necessary to the restoration of the healthful equilibrium. Hence Professor Püchelt calls the class of diseases thus operating “*ausgleichungskrankheiten*,” *equalizing or adjusting diseases*.

These adjusting diseases do not, however, always recur regularly, or induce a period of comparative health, as for example, when they return too frequently. In these cases, the premonitory indisposition quickly reappears. But it is still worse for the system, if the adjusting disease has been repressed, for metastatic inflammation or congestion almost invariably follows. If on the other hand, from bad treatment, the critical evacuations become excessive, the disease will assume a fatal type, and terminate in inflammation, hectic fever, or dropsy.

It does not appear that this cycle of phenomena is prolonged into extreme old age. There are individuals, especially females, who having escaped all the dangers of the grand climacteric, appear to renew the general health, and are even better than when young. These fortunate persons are generally spare and temperate in their habits. The termina-

tion of the venous state is, however, in one or other of the diseases of old age, and as we have but lately reviewed the latter class, we need only now refer to the article in vol. XVII, p. 100.

In discussing the treatment of the venous state, and its diseases, Professor Püchelt displays considerable practical knowledge. His general plan is (as might be expected) the hygienic and dietetic. Exercise in the open air, travelling by land and sea, moderate hydiatry especially at spas, and the grape cure are recommended. The use of fresh vegetables is prescribed for the removal of the venous condition of the blood.

### ART. XIII.

*Observations upon the Employment of Compression in Aneurism, with some Statistical Details.* By O'B. BELLINGHAM, M.D. F.R.C.S.I., Surgeon to St. Vincent's Hospital.—*Dublin*, 1845. 8vo, pp. 16.

THE frequency of the occurrence of aneurism, the extreme difficulty of many of the operations necessary for its cure—testing as they do more closely than any others in the whole range of surgery the skill and knowledge of the operator—and the great uncertainty of their result, even when performed under the most favorable circumstances—render any modification of the established treatment of this disease a subject of peculiar interest and importance to the surgeon. This is more particularly the case if the advocates of the new process hold out the hope that by its adoption the dangers that are attendant on the means ordinarily pursued may, in a great measure, if not wholly, be avoided.

Indebted as we are to John Hunter for many of the most brilliant discoveries in the science, and of the most useful improvements in the practice of surgery, there is none for which we are under deeper obligations, than the knowledge of the true principles that should guide the surgeon in applying a ligature to an artery in a case of aneurism. Shortly after the introduction of the Hunterian operation and the general recognition of its principles by surgeons, it was attempted to be modified by the employment of such pressure to the artery leading to the sac as would obliterate its canal; the pressure being applied to the vessel at a point where its coats were healthy, and not to the tumour itself or its immediate vicinity, as had previously been done by Guattani and others. This plan of treatment, which was pretty extensively tried, was far from successful, and in those cases that did well under it, success was dearly purchased by the extreme pain and irritation to which the patient was subjected.

To secure the obliteration of the artery, various plans were proposed by different surgeons. The following was recommended by Mr. Freer: a moderately tight bandage is first to be applied to the whole limb; a pad is next to be placed over the artery a few inches above the tumour, and then a tourniquet round the limb, the screw of which is to be fixed upon the pad. Care must previously be taken to secure the limb from the action of the instrument by a piece of board wider than the limb itself, by which means the artery only will be compressed when the screw is tightened. The tourniquet should now be screwed up till all pulsation in the tumour ceases; in a few hours the limb will become cedematous and swollen, when

the tourniquet may be removed, the pressure of the pad and bandage sufficing for the remainder of the treatment. This process was found by Mr. Freer to succeed in obliterating the radial artery of horses, but was not very successful when applied to the human subject. The instrument used by Sir A. Cooper and Sir W. Blizard, for the purpose of compressing the artery, resembles in its principle the one usually employed at present. "The points of support for this instrument were the outer part of the knee and the great trochanter, a piece of steel passing from one to the other; and to the middle of this a semi-circular piece of iron was fixed, which projected over the femoral artery, having a pad at its end moved by a screw, by turning which, the artery was readily compressed, and the pulsation in the aneurism stopped, without any interruption to the circulation in the smaller vessels."\* The patient, however, was unable to bear the pressure for more than nine hours, so great was the agony produced.

Mr. A. White likewise tried pressure in one case with a peculiarly constructed spring. "The woman bore the pain heroically for five days; but the parts compressed sloughed deeply. The cure was completed; but the pain, danger, and risk incurred were infinitely greater than any which could have been sustained from the usual operations."† Lisfranc‡ states that he has seen two cases of popliteal aneurism cured by compressing the femoral artery at the lower third of the thigh, and many in which the employment of this means was unsuccessful. According to Lisfranc compression has been tried by the following surgeons, besides those whose names have just been mentioned: Viricel, Boyer, Collier, Travers, Pelletan, Gualtier, Clement, Dubois, Lyford, and Ehrmann. On collecting all the cases he finds that the successful were to the unsuccessful in the proportion of five to thirteen.

From the foregoing details it would appear that the success attending the treatment of aneurism by compression of the artery leading to the tumour was but trifling, and certainly not sufficient to counterbalance the pain and danger consequent on this method. The cause of this want of success was not so much owing to the compression itself as to the erroneous principles on which it was conducted; the object aimed at by the surgeon in all these cases being to effect a cure in the same manner as when the vessel is ligatured; namely, by its obliteration at the point compressed. In order to accomplish this it was of course necessary to keep up very powerful and long-continued pressure on one spot, the inevitable result of which was the occurrence of insupportable pain, of ulceration and sloughing of the parts compressed, and of much constitutional disturbance. Indeed the local mischief and general irritation occasioned by this plan were such that it was quickly abandoned for the more certain and less painful operation by the knife.

The employment of pressure in cases of aneurism having thus very properly fallen into disrepute, it appears to have been entirely forgotten by surgeons until its revival three years ago by Dr. Hutton, whose attention seems to have been directed to it in consequence of its being unadvisable for several reasons to operate, in the usual way, on a patient of his labouring under popliteal aneurism. From the time of its revival in November 1842 until

\* Medical and Physical Journal, vol. viii, p. 2.

† Guthrie on Diseases of Arteries, p. 142.

‡ Sur l'Oblitération des Artères, &c. p. 40.



February 1845 it has been had recourse to in twelve cases of femoral and popliteal aneurism, and in all with the most perfect success; for not only has the disease been in every instance speedily cured with comparatively little pain or irritation, but in not one case has it, as yet, we believe, shown a disposition to return. And if the employment of compression in aneurism, as at present conducted, continues to be supported by an amount of success at all approaching that which has hitherto attended it, it cannot but be looked upon as one of the happiest of the triumphs of modern surgery.

The great success that has attended the revival of the employment of pressure to the artery at the site of Hunterian deligation for the cure of aneurism, is no doubt owing to its mode of action being properly understood, and to it being now recognized that the degree of pressure necessary for ensuring the cure of the disease is very much less than what is requisite for the obliteration of the canal of the artery by plastic deposit at the point compressed—the object formerly aimed at, and the accomplishment of which entailed so much suffering upon the patient. On inquiring closely into the particulars of the cases of aneurism that have lately been treated with pressure, it will be found that the femoral artery could be traced, after the cure was accomplished, nearly to the sac of the aneurism, considerably below the point compressed, proving incontestably that the vessel is not obliterated at the site of the pressure, but that the disease is cured in some other way than by the obstruction of the artery leading to it.

In what way then, it will be asked, is the cure effected? In answer to this question we cannot do better than to give Dr. Bellingham's remarks in his own words:

"Upon a former occasion (Dublin Journal, vol. xxiii,) I endeavoured to show that such an amount of pressure as would obliterate the artery is never necessary; and that a cure would be more certainly and more quickly brought about by allowing a feeble current to pass through the sac of the aneurism, than by completely checking the circulation in the vessel. As this principle appears to have been established by the results of the cases which have occurred in this country since, I shall now merely quote what I then said upon the subject.

"When it was considered absolutely necessary for the success of compression, that such an amount of pressure should be applied, as was almost certain to occasion sloughing of the part, and very certain to occasion intense pain and suffering to the patient; and when, in addition, this was to be prolonged through five successive nights and days, we can readily understand why patients refused to submit to it, and we can easily account for the disrepute in which the practice fell, and for the unwillingness of surgeons to adopt this treatment in preference to the simple operation of placing a ligature upon the femoral artery. It would appear, however, that it is not at all essential the circulation through the vessel leading to the aneurism should be completely checked, but rather the contrary; it may perhaps be advantageous at first for a short period; by which the collateral circulation will be more certainly established. But the result of this case, if it does no more, establishes the fact, that a partial current through an aneurismal sac, will lead to the deposition of fibrine in its interior, and cause it, within a few hours, to be filled and obstructed, so as no longer to permit of the passage of blood through it. Pressure so as altogether to obstruct the circulation in an artery must necessarily be slower in curing an aneurism, as it must in some measure act by causing obliteration of the vessel at the part to which the pressure has been applied; whereas a partial current through the sac enables the fibrine to be

readily entangled in the parietes of the sac in the first instance, and this goes on increasing, until it becomes filled; the collateral branches having been previously enlarged, the circulation is readily carried on through them." (pp. 5 and 6.)

The object then to be accomplished by the compression of the artery, as at present adopted, is the coagulation of the blood, and the formation of a fibrinous deposit in the aneurismal sac. The flow of blood through the tumour being very greatly lessened, the fibrine is more readily entangled by its lining membrane, and successive depositions of lymph taking place, the sac is completely filled, the tumour becomes solid, and all pulsation in it ceases. As no blood can any longer pass through the sac, the circulation is entirely carried on by the collateral vessels, which have gradually been enlarging proportionately to the obstruction in the sac, and the condition of the aneurismal tumour becomes precisely that of one that is undergoing spontaneous cure.\*

Since the revival of the treatment of aneurism by compression of the artery at the Hunterian site, very considerable improvements have been made in the kind of instrument to be used, and in the mode of applying the pressure. The instrument that Dr. Bellingham employs is a modification of a carpenter's clamp, and was invented by a patient of Dr. Harrison's whilst under treatment for popliteal aneurism. It consists of an arc of steel, covered with leather, at one extremity of which is an oblong padded splint, the other extremity terminating in a nut containing a quick screw, to which a pad similar to that of the tourniquet is attached. The principle of this instrument is stated by Dr. Bellingham to be so simple, that the patient can regulate its application himself; and it can be made of every size, so as to compress any vessel within the reach of compression.

The instrument used by Mr. Liston and others is similar in principle though differing somewhat in construction, being simply a horse-shoe tourniquet with well-stuffed pads. It is of considerable importance in practice that the pads be sufficiently broad and square; if too conical they are apt to occasion inconvenient and unnecessary excoriation, or even sloughing, and to allow the vessel to roll away from under them. Mr. Liston has found much advantage in protecting the integuments covering the artery with a piece of soap-plaster, spread on leather, and the outer part of the thigh with a splint of strong sole leather, for the external pad of the instrument to rest against; thus removing all direct pressure from the soft parts, and diffusing it over a greater extent of surface.

The mode of application of the compressor has lately been modified in a very important manner by Dr. Bellingham. This gentleman employs two or three of the instruments at the same time, which are placed upon the artery leading to the aneurism, only one at a time, however, being tightened. When the pressure of this becomes painful it is slackened, one of the others having previously been screwed tight. In this way the pressure may be alternated and continued uninterruptedly for any length of time, the patient being able to make the change in the tourniquets as he

\* It has occurred to us that the process of cure of an aneurism by means of compression might be much hastened and rendered more certain even than it at present appears to be, by employing in conjunction with it, the plan recommended some years since by Mr. Phillips, of passing a galvanic current through the tumour, and thus coagulating the fibrine in it. We merely throw out this suggestion for the consideration of those surgeons who may be about to treat any cases of aneurism by the pressure of the artery leading to the tumour.

finds most convenient to himself. Another advantage of this mode of application of the instrument is that the cure will be much expedited in consequence of no time being lost by the parts subjected to pressure becoming excoriated or ulcerating, from the pressure of the pad of any one of the instruments being too long continued.

Conceding, however, the practicability of curing certain aneurisms by the compression of the arterial trunks leading to them, the question naturally arises, Does this plan of treatment possess any, and if so, what advantages over the established practice by ligature? To this important question we are, perhaps, scarcely in a condition to give an answer at present. The number of cases treated by compression is not as yet sufficiently large to warrant us in drawing any general inferences; and although Dr. Bellingham adduces twelve cases of femoral or popliteal aneurism (the only ones in which it has as yet been tried) that have been cured by it, yet this number cannot be considered large enough for the purpose of comparison with the result of the treatment by ligature, for we know surgeons who have tied the femoral artery more than twelve times in succession without losing a patient, or having any disagreeable after-consequences produced.

With this caution to our readers we will enumerate the principal advantages that Dr. Bellingham considers compression to possess over the ligature of an artery in cases of aneurism.

1. In the first place it is not attended by the slightest risk to the patient: whereas, even the most carefully performed operation with the knife is attended by very considerable danger, arising, as Dr. Bellingham very justly remarks, not so much from the disease itself as from the means adopted for its relief.

2. There are certain cases of aneurism in which it would not be safe to ligature the artery, as such a step would probably be followed by unfavorable results. The cases alluded to are those in which the aneurism has been allowed to attain so large a size as to interfere materially with the collateral circulation, compressing the veins in its neighbourhood, producing congestion of the extremity and consequent oedematous infiltration of the tissues. If the vessel be ligatured in these cases it is scarcely possible to prevent the occurrence of gangrene, the collateral circulation not being able to establish itself with sufficient rapidity to preserve the vitality of the limb; and indeed the only resource in a case of the kind alluded to is the removal of the diseased limb. In the treatment of aneurism by compression, on the other hand, the change effected is slow and gradual—the supply of blood is not entirely cut off from the affected part, and can at any moment be restored. Indeed, Dr. Bellingham thinks, and in this opinion we entirely coincide, that pressure is more likely to succeed in curing a large than a small aneurism, inasmuch as the lining of a large aneurismal tumour is not so smooth as that of a small one, and will consequently more readily entangle the fibrine of the blood that flows through it. In support of this opinion we may adduce the cases that have already occurred, in most of which the aneurisms were of considerable size.

3. Again, it is not uncommon for a thinning of the walls of the sac to take place, and for inflammation and suppuration to follow the application of the ligature. This has not as yet occurred after the use of compression,

although in several of the cases in which it was had recourse to the tumour was of very large size, and in Mr. Cusack's case the parietes were so much thinned, that great fears were entertained that they would give way.

4. Another case in which the application of a ligature is attended with much danger, is when there is such disease of the coats of the artery that the thread cuts its way through them without exciting the necessary adhesive inflammation. In this case compression would be as likely to be followed by favorable results as in any others, the object being not to obliterate the vessel at the point compressed, but merely to retard the passage of the blood through the sac.

5. There are other less common cases, those of the aneurismal diathesis for instance, or when the patient has an unconquerable dread of the knife, in which the application of a ligature to an artery is inadmissible, but in which compression may very safely be had recourse to.

6. Lastly, should pressure fail in curing the aneurism, which Dr. Bellingham thinks very unlikely from the results hitherto obtained, its employment would not preclude the subsequent operation in the ordinary way; "but by retarding the increase of the aneurism, and assisting in the establishment of a collateral circulation, it would tend rather to render the chances of the operation by ligature more favorable."

Such being the advantages that compression possesses over the ligature in the treatment of aneurism, what, it will be asked, are the objections to its employment?

The first that has been urged is that the arteries to which this plan of treatment is really applicable, are but few in number. But Dr. Bellingham has a sufficient answer to this:

"What is really the fact? The artery above all others in which aneurism is most frequent after the aorta, is the popliteal, and next in frequency come the femoral and the brachial. Lisfranc has given a table of 179 cases of aneurism, (exclusive of those of the aorta,) collected from various works, and of this number the popliteal artery was engaged in 59 instances, while the carotid was engaged 17 times, the subclavian 16, and the external iliac only 5 times. But even this must be much below the average, for few cases, comparatively, of operations for popliteal aneurism have been published, owing to its frequency, unless there happened to have been some peculiarity in the case; whereas most of the operations upon the iliac, subclavian, and carotid arteries, have been brought before the profession on account of the unfrequency of disease in those vessels. It must be recollected also that aneurism of the subclavian, or carotid arteries near their origin, and of the common iliac or *inominata*, which do not admit of the application of compression do not admit either of the employment of the ligature. It surely therefore ought not be urged against this method, that because aneurism occurs in arteries beyond its reach, we should refuse to apply it to vessels to which it is adapted; or that the practice should be denounced because it is not applicable to every vessel." (pp. 9-10.)

Another objection that has been made to the plan of treatment under consideration, is the likelihood of the return of the pulsation in the tumour. It is difficult at present to answer this objection in a way that will be satisfactory to all, as it may be urged that the cases treated by compression have not been treated for a sufficient length of time to make it certain whether the disease has been effectually cured or not; for it is well known to every surgeon that after the ordinary operation an aneurism may return

at a very late period. Thus, Sir A. Cooper has related a case in which fifteen years elapsed before the tumour returned; and Mr. Cæsar Hawkins one in which no pulsation appeared for seven years after the artery had been ligatured, but then it did return, and the limb was amputated. These, however, may justly be considered exceptional cases; and we think that if the pulsation has not returned in a twelvemonth after the operation, we may very fairly consider the disease to be cured. Now in several of the instances referred to in Dr. Bellingham's paper, in which compression has been had recourse to, two and in some nearly three years have elapsed, and in few less than a twelvemonth; yet in none has the disease to our knowledge reappeared. And indeed there is no reason for supposing that the pulsation would be more likely to return after the cure by compression than after that by ligature of the vessel. On the contrary, from the manner in which the cure is effected when compression is employed, the sac being gradually filled up by a mass of solid fibrine and not, as when the ligature is had recourse to, by a loosely-formed coagulum, the disease would appear to us to be less likely to return after its cure by compression, than by the ligature.

The last objection worth noticing is that this mode of treating aneurism is more tedious and painful than the ligature of the artery. Several of the cases published in which the pulsation ceased in the tumour after compression had been employed for a few days only, would tend to show that it is not necessarily more tedious than the treatment by tying the vessel. And even supposing it to occupy double the time required for the cure of an aneurism by the successful application of the ligature, if it can be shown to be less likely to be attended with dangerous consequences, and to afford a greater chance of safety to the patient, few surgeons would be rash enough to run an unnecessary risk in order to save a few additional days of a very simple treatment.

There is as little foundation for the assertion that the treatment by compression is more painful than that by the ligature from the first incision with the knife to the removal of the last dressing. As formerly employed, when the object was to obliterate the artery at the point compressed, it no doubt was most painful and tedious. But as now practised, as we have had occasion to observe in two instances of its employment, more particularly if the very important improvement of having two or three compressors on the limb, as suggested by Dr. Bellingham, is had recourse to, the treatment will be found to occasion but very trifling uneasiness to the patient.

The following are the principal deductions that Dr. Bellingham draws from the preceding inquiry :

" 1st. That the arteries to which pressure is applicable, being far more frequently the subject of spontaneous aneurism than those to which it is inapplicable, compression promises to supersede the ligature in the great majority of cases.

" 2d. Pressure has several obvious advantages over the ligature, being applicable to a considerable number of cases in which the ligature is contra-indicated or inadmissible.

" 3d. The treatment of aneurism by compression does not involve the slightest risk; and even if it should fail, its employment not only does not preclude the subsequent operation by ligature, but renders the chances of the operation by ligature more favorable.

" 4th. Such an amount of pressure is never necessary as will cause inflammation and adhesion of the opposed surfaces of the vessel at the point compressed.

"5th. Compression should not be carried even so far as completely to intercept the circulation at the point compressed; the consolidation of the aneurism will be more certainly and more quickly brought about, and with less inconvenience to the patient, by allowing a feeble current of blood to pass through the sac of the aneurism.

"6th. Compression by means of two or more instruments, one of which is alternately relaxed, is much more effectual than by any single instrument.

"7th. Compression according to the rules laid down here is neither very tedious nor very painful, and can be maintained in a great measure by the patient himself.

"8th. An aneurism cured by compression of the artery above the tumour, according to this method, is much less likely to return than where the ligature had been employed." (pp. 13, 14.)

The employment of compression to the artery above the aneurismal tumour, according to the principles on which it is at present adopted, is as yet but in its infancy, and time alone will enable us to form a proper estimate of its value. The results, however, that have already been obtained by it are of the most satisfactory character, and such as must induce every surgeon to hesitate before he again applies a ligature, in a case of aneurism, to an artery within the reach of compression. To all those who wish to obtain full information of the present state of this very important subject, we would strongly recommend the perusal of Dr. Bellingham's very valuable pamphlet, which contains in a few pages everything of importance connected with it.

#### ART. XIV.

1. *Guide du Médecin Praticien, ou Résumé général de Pathologie Interne et de Thérapeutique appliquées.* Par F. L. J. VALLEIX, Médecin du Bureau central des Hôpitaux de Paris, etc. Tome I.—Paris, 1842.

*Guide of the Practical Physician, or General Summary of Internal Pathology and Therapeutics, clinically applied.* By F. L. J. VALLEIX, Physician to the Central Bureau of Hospitals of Paris. Vol. I.—Paris, 1842. 8vo, pp. 566.

2. *The Practice of Medicine; a Treatise on Special Pathology and Therapeutics.* By R. DUNGLISON, M.D., Professor of the Institutes of Medicine in Jefferson Medical College, Philadelphia, &c.—Philadelphia, 1844. Second Edition. Two Volumes, 8vo, pp. 632, 684.

IN accordance with the intention announced in our former article on French and American Practical Medicine (vol. XVIII, p. 287,) we resume, nearly at the point where we left off, our parallel between the works of MM. Dunglison and Valleix.

BRONCHITIS. M. Valleix recognizes three forms of this affection—the acute, the chronic, and the pseudo-membranous. Dr. Dunglison's division of bronchitis, properly speaking, is likewise tripartite—viz. into the ordinary acute bronchitis; epidemic acute B. (influenza); and chronic B.; whilst, as a singular variety of the chronic form, he introduces, under the name of "SUMMER BRONCHITIS," the affection commonly known in this country by the term of "hay-asthma," or "hay-fever."

M. Valleix subdivides one of his divisions (acute bronchitis,) into three

forms, viz., the slight and apyretic, the intense febrile, and general capillary bronchitis.

Assuming that the signs of so familiar a disease as acute bronchitis are well known to our readers, we shall not consume their time by extracting from our authors the symptoms ascribed by such to the ordinary form. As might be supposed, their descriptions—excepting that that of M. Valleix is the more minute and detailed—correspond. We are, however, disposed to dwell on this writer's description of general capillary bronchitis. He considers that this very fatal form of the disease has been described under the names of *peripneumonia notha*, *exanthematica*, *catarrhalis*, *catarrhus suffocativus*, or *catarrhe suffocant* by many authors, such as Sydenham, Sauvages, Morgagni, Cullen, and Lieutaud. We must take the liberty of remarking that the *peripneumonia notha* of Sydenham appears, if not a different disease from the highly fatal one described by M. Valleix, to have affected a very different class of persons. Sydenham says expressly that *peripneumonia notha* affects those of adult age or beyond it, and who are addicted to the use of ardent spirits (Sydenham, ed. 1726, p. 209.) The description of Sauvages (*Classes Morborum* p. 500.) corresponds with that of Sydenham, in fact is derived from it, and equally represents a severe bronchitis affecting the aged, or those who have induced premature old age by intemperance. He considers it synonymous with "fluxion of the chest" (*poitrine*), which identifies it with bronchitis. But the form of bronchitis which M. Valleix describes by the terms "general capillary" is emphatically a disease of childhood, so much so that his own experience for three years at the Salpêtrière and his researches into the practice of others have furnished him with only five unequivocal cases of this affection in adult and advanced life. We find in M. Valleix's description of the affection so graphic a picture of a disease to which, in spite of the most energetic and well-applied measures we have seen many a fair child succumb, that we present it with slight abbreviation to our readers:

"In general the disease commences as a common cold of variable intensity; and then we can discover at the posterior and inferior part of the chest on both sides, as in bronchitis of ordinary intensity, a subcrepitating rale extending to the third or the half of the height of the thorax. But soon these symptoms assume an unwonted intensity, and the sufferers present the following symptoms:

"The face is pale, the lips present a violet colour, the eyes are prominent, the countenance is extremely anxious, the nostrils are dilated at each inspiration; the patient is agitated and constantly changing his positions. Children somewhat advanced in life and adults sit and incline the head forward; or raise it by resting on their elbows. There is panting, violent dilatation of the thorax, and, at intervals, the breathing is sonorous and stertorous, but more tranquil after expectoration. The cough is violent and humid, recurring often in paroxysms, but does not possess any peculiar character.

"In very young children, there is no expectoration; in others difficult expectoration of a matter more or less thick, not frothy, and of a pale yellow colour, and of stringy mucus, occasionally frothy and streaked with blood. The voice is not affected; speech is brief and interrupted; there is violent pain under the sternum, and the oppression is extreme. The pulse is rapid, ranging in children observed by M. Fauvel, from 124 to 160.

"After a time varying in different cases, the strength beginning to fail, the cough becomes less vigorous, and the expectoration more difficult. The breathing

is more embarrassed and constantly stertorous. The face and *conjunctiva* are highly injected. There is an expression of great terror, and the patient throws himself into singular positions, to avoid lying on his back, moving himself forward, lying on his stomach, hanging his head over the bed-side, or throwing himself forward to meet the air which he stands in need of. The pulse becomes 'wretched,' is increased in frequency, and often cannot be counted. There is constant somnolence, interrupted by momentary exacerbations, produced by a paroxysm of coughing, the act of drinking, or expectoration. Sometimes delirium and agitation are observable during the night, and death soon occurs."

After remarking that in this disease wheezes (râles) of various sorts are heard throughout the whole extent of the thorax, and that its sonorousness on percussion is rather increased than diminished, he goes on to say:

"If this description has been carefully studied, we shall easily discover that all the peculiarities which it presents are solely due to the great extent of the inflammation. We have, in fact, only symptoms of asphyxia caused by the difficulty of *hematosis* produced by the obstruction of almost all the air-passages, and by the impossibility that the air should come in contact with the mucous membrane through a layer of thick and glue-like matter." (Valleix, t. ii, pp. 76-8.)

We think this an accurate and expressive picture of one of the most fatal diseases with which infantile life is assailed.

M. Valleix gives a synoptical table of the diagnosis between his different forms of bronchitis and certain other diseases of the chest with which they might be confounded. We extract a portion of this:

"I. *Febrile Bronchitis*.

Dull pain under the sternum.

Fever of moderate intensity.

Subcrepitating wheeze at the inferior and posterior part of the chest on both sides.

Thorax normally sonorous.

II. *Febrile Bronchitis*.

Pain under the sternum.

Normal sound under the clavicles.

Subcrepitating wheeze at the base of both lungs and posteriorly.

No hemoptysis. [We think this doubtful.—*Rev.*]

III. *General Capillary Bronchitis*.

Frequently neither shivering nor vomiting at the commencement.

Neither coryza, nor watery eye, nor sore-throat, nor muscular pains.

Subcrepitating wheeze diffused throughout the chest.

IV. *General Capillary Bronchitis*.

Dyspnea very intense.

Anxiety extreme.

Subcrepitating wheeze diffused throughout the whole extent of the chest.

I. *Pneumonia*.

Pain of the side in a situation more or less remote from the sternum.

Intense fever.

Crepitating wheeze posteriorly on one side only.

Obscurity on the side where the abnormal sound is heard.

II. *Acute Phthisis*.

Pain under the clavicles or between the shoulders.

Dullness in the subclavicular region.

Crackling and subcrepitating wheeze at the summit of the lungs.

Sometimes hemoptysis.

III. *Eanthematous Fever*.

Shivering, vomiting, &c. at the commencement.

Coryza and watery eye in measles, sore-throat in scarlatina, muscular pains in smallpox.

Subcrepitating wheeze null, or limited to a small extent of the base of the lungs.

IV. *Lobular Pneumonia*.

Dyspnea less considerable.

Anxiety moderate.

Subcrepitating wheeze limited to a smaller extent of the lung."

When we turn to the subject of the treatment of acute bronchitis, we find a complete correspondence, if not in detail, in the general proceeding recommended by our authors. M. Valleix's summary of treatment suggests for slight bronchitis, emollients, weak narcotics, mild purgatives, and revulsives; for febrile bronchitis, diluents, bloodletting (general, local, or



both), narcotics, emetics, purgatives, spirituous and sudorific stimulants. These last are suggested on the authority of Laennec, but with much doubt and caution, and a suggestion from M. Mériadec Laennec, that the proceeding (with spirituous matters) is effectual only as a means of producing perspiration, and that this purpose is more surely and safely effected by an opiate taken warm. Instead of the stimulating potions of his uncle, Mériadec Laennec recommends that an ounce of syrup of poppies should be given in a cup of very warm pectoral decoction. For general capillary bronchitis, M. Valleix recommends, during the first period, bloodletting, emetics, revulsives, emollients, repose; during the second, light stimulants, and *strychnia* or *nux vomica*.

Dr. Dunglison's measures are, in substance, the same as those of M. Valleix. In mild cases of acute bronchitis, rest in bed, abstinence from animal food, and a diet of gruel, arrow-root, or tea, and mucilaginous medicines containing minute quantities of opium, are the means suggested. When the fever is considerable, the sense of heat and pain in the chest great, with much dyspnea, and violent and frequent cough, blood may be taken, and the operation may be repeated, when the patient is young and vigorous, more than once or twice. In very severe cases, the safety of the patient is said to repose on the vigorous employment of general bloodletting, followed by the application of cupping-glasses or leeches to the chest, and subsequently of blisters, and the contra-stimulant use of emetic tartar—on all the means, in short, which are demanded in acute laryngitis.

Dr. Dunglison approves of the declaration of Mackintosh, that in acute bronchitis, expectorants and diaphoretics are more injurious than beneficial, adding that the common error consists in the belief that there is any agent that can act either as an expectorant or as a diaphoretic, in all states of the system. Where it is necessary to encourage expectoration or diaphoresis, the pathological cause of the obstruction must be inquired into and removed. In this sentiment we fully concur, and would remark that the great power of emetic tartar as a diaphoretic and expectorant in acute bronchitis, depends on its correcting the local inflammatory condition and subduing the tone of the system constituting the resistance to the evacuations from the skin and air-passages.

**INFLUENZA.** Dr. Dunglison places influenza in this class, under the title of epidemic acute bronchitis. We think this as fitting a collocation as could be found for this singular disease, although the influence of its cause extends far beyond the bronchial mucous lining. He has collected from various quarters chronological lists of the different influenzas which have ravaged the world. There is considerable difference among his authorities, who are Most, Saillant, Webster, Zeviani, and Kluge. The list of Most is limited to the 18th century, and is therefore much less ample than the others. That of Zeviani is said to sin by excess, in consequence of the Italians attaching the name influenza to other epidemics besides catarrh. However this may be with respect to preceding centuries, we find this list omitting well-marked influenzas of the 18th century, for instance, the disease of 1775, described by Sir G. Baker and Dr. Fothergill. Webster's list comprises three centuries only, from the 16th to the 18th centuries inclusive; but for this period seems the most correct, excepting that the compiler appears to have multiplied epidemics by describing the

same disease in different parts of its progress. He gives us, for instance, an influenza for each of those three successive years, 1788, 1789, 1790. By making some corrections, manifestly required, in Webster's list, and supplying from other sources the epidemics of the centuries preceding the 16th and those of the 19th century, the following enumeration of epidemics of influenza, which we consider if not absolutely correct to be very nearly so, is formed.

13th century	. 1239
14th	1311, 1323, 1397, 1398, 1397, 1400.
15th	1410, 1414, 1438, 1482.
16th	1510, 1543, 1557, 1562, 1574, 1580, 1587, 1591, 1597.
17th	1602, 1610, 1622, 1647, 1650, 1655, 1658, 1675, 1679, 1688, 1693, 1697.
18th	1708, 1712, 1789, 1733, 1737, 1743, 1747, 1755, 1762, 1767, 1772, 1775, 1782, 1788, [1795, 1797.
19th	1801, 1803, 1831, 1833, 1837.

We have endeavoured, in compiling this list, to avoid multiplying epidemics,—investing with plurality one and the same disease. But we cannot help feeling a doubt how far we have been successful in some cases. For instance, the last epidemic of the 18th century, or the first of the present one, marked by Kluge as having taken place in 1800, but which, according to our ideas, did not, at least in this country, become manifest till the year next succeeding, 1801, we find in Kluge's list followed by one in 1803. Now we cannot help feeling a doubt whether these two, inserted as distinct, were not the same disease continued in various parts of the world. A similar remark applies to the epidemics noted for 1831 and 1833. That of 1833 was manifest enough,—in fact, was little inferior in intensity and diffusion to the great influenza of 1837; whilst in certain districts of England there was no epidemic in 1831. Having repeatedly, however, observed that epidemics grow up slowly in communities, their seeds scattered here and there, requiring time for their perfect development and outbreak, we think it probable that an epidemic had been existing somewhere, in a slight degree, in 1831, which did not reach its height of diffusion and intensity till 1833.

Making every allowance, however, for confusion from this source, we have, during a period of five centuries and a half, epidemics of influenza at the rate of eight and a half per century. Now if we couple with this frequency of recurrence, the great amount of mortality induced by the disease, we find in influenza a formidable engine for abridging the duration of human life. It has been asserted that there is no notable increase of deaths during influenza, and Dr. Dunglison takes some pains to refute Dr. George Gregory's opinion expressed to this effect. We remember a clergyman, during the influenza of 1837, saying to us, "Some medical men tell me that influenza kills nobody,—*if this be the case*, I should like you to tell me, what is doubling the funerals in my parish?" Our reply was simply, "*this is not the case*," for at that moment we were witnessing the ravages of the disease, especially among the aged and very young, to an extent quite appalling, around us. We find this proportion, the doubling of the mortality by influenza, existing abroad as well as at home. Thus in Hamburg, in January 1836, there died 466 persons; in December of the same year, 364; and in January 1837, whilst the influenza was raging, 836 persons. This duplication of the mortality is during the height of the epidemic

only, the duration of which is about one month. We could illustrate this from various quarters; but we select the returns from the Prospect Cemetery, Glasnevin, the largest in Ireland, for this purpose. The funerals here in January 1836, were 392; in December of the same year, 413; and in January 1837, 821. January, be it remarked, was, as far as we have been able to trace it, the period during which the influenza of 1837 was at its height in this country. When January, however, the month of the greatest intensity and diffusion of the disease was over, the funerals fell in number, there having taken place 537 in February, and 477 in March. If we add to this considerable immediate mortality the deaths which result from the direct sequelæ of the disease, such as hepatitis and abdominal dropsy, and from diseases of which the seeds may be in the system, but which owe their development to influenza, such as phthisis—and these diseases, with a fatal issue, we saw follow the influenza of 1837—we can understand that the fatality of an epidemic must be very great, of which the immediate mortality exceeded, in Europe, that from cholera.

Nearly eight years have elapsed since the last influenza, and another invasion of an epidemic, recurring eight times in a century, is in all probability not very remote. Has the experience of those which have passed furnished us with arms for combating that which may speedily follow? We question whether it has. M. Andral considers each epidemic of influenza as an individual unlike its fellows: "each epidemic has presented some special phenomenon; every form has constituted, as it were, a sort of morbid individuality, which, after its manner, ran through phases of increase and decrease, always commencing in the same way, and being invariably like unto itself." Dr. Dunglison, founding on the remarks of Andral, says:

"If such be the diversity of phenomena in influenza, and such the uncertainty that hangs over it, it need scarcely be said that no fixed rules of treatment can be laid down."

These statements admit, we hope, of some qualification. Epidemics of influenza, although not necessarily identical, must be similar, or they could not be recognized as such. We have been close observers of two epidemics of this disease, those of 1833 and 1837; and, excepting in degree and diffusion, the latter being the more severe and general, they were the same affection, and we should say the same *principles* of treatment were applicable to both. To meet the very reasonable question,—what were these principles? we shall intrude a brief statement on our readers. We had before us patients suffering under inflammation of one or more sets of mucous membranes, and the diet, medical treatment, and general management were required to be such as this state of the system is well known to demand. In all cases repose in bed, and diluent diet, the patients being restricted to the simplest diluents with a little bread, were essential. In this restriction their own feelings led them cheerfully to acquiesce. In few instances of the primary disease was bloodletting performed; but when resorted to early, and this was done in some severe cases, it was beneficial. In relapsed attacks, in which the inflammation was generally of a much more decided and acute character than in the primary disease, this remedy was more required and better supported. Leeches to the thorax or abdomen, according to the seat of the more prominent local affection, were

constantly resorted to, and with great benefit. The bowels were moved by means of gentle laxatives to which they were readily amenable, but they were found extremely intolerant of the stronger purgatives, which produced excessive pain, an effect which we ascribed to the inflamed condition of the lining of the digestive canal; apparently for the same reason it was observed that circumspection was required in the use of antimony. The large doses of *Rasori* or anything approaching to them, could not be borne, the vomiting, purging, and irritation of the bowels they occasioned being insufferable; but very small quantities of emetic tartar were introduced into the ordinary saline diaphoretics when such were given, or into the usual demulcents employed to allay cough. Of all remedies, however, well-regulated temperature and repose in bed were found the most efficient; at least without these, medicines were found of little avail, and all the relapsed attacks, which we witnessed in the two epidemics we have mentioned, were referrible to the neglect of these simple measures. Repeatedly have we seen rigors, followed by an exasperation of the thoracic affection, or an invasion of a fresh order of parts, such as the head or bowels, in all cases with more danger either immediately to life, or of laying the foundation of structural change,—result from the patient's quitting bed, and engaging in premature exertion.

In explanation of the extreme proclivity to relapse which exists in influenza, it should be remarked that there is a strong tendency in the disease to a natural cure by perspiration; after the disease has existed for a day or two, the skin is constantly wet. Now if this process be interrupted by premature rising from bed, not only are the efforts of nature marred, but, by the great evaporation from the wet surface, chill takes place, very speedily passing into rigor, with aggravation of the primary symptoms or excitement of a new train.

*Phthisis.* Certain important points in the diagnosis of chronic bronchitis and the ability with which they are handled by our author, lead us to touch on a disease, which on account of its familiarity we might otherwise have passed unnoticed. The diagnosis between phthisis and chronic bronchitis, is ably handled by both writers. We select M. Valleix's account of it as the most detailed and precise:

"*Phthisis pulmonalis*, when it has attained to an advanced period, presents no greater difficulties (than chronic pneumonia or pleurisy.) The dull sound under the clavicles, the gurgling (gargouillement,) or cavernous respiration, &c., leave no doubt of the existence of phthisis. But when this disease is only commencing, the physical signs are much less marked, and then there might be some doubts. We should then examine with care the general condition, and the local symptoms presented by the patients; and if there be emaciation out of proportion to the local symptoms, paleness, feebleness and night-sweats, we should suspect phthisis pulmonalis rather than bronchitis. If for a long time, the cough remains dry, or gives occasion to an expectoration of insignificant amount without any particular character, if there exist pain between the shoulders, considerable dyspnea, and a slight feverish movement towards evening, the certainty will be greater. Finally, if we ascertain the complete absence of the subcrepitating wheeze at the posterior part of the chest, and, on the contrary, under the clavicles some modification of the respiratory murmur, such as its feebleness on one side, a little roughness, prolongation of the expiration, or some crackling, we can no longer doubt the existence of phthisis and the idea of chronic bronchitis should be entirely rejected." (Valleix, t. ii, pp. 117-8.)

We pursue the subject of diagnosis, under the guidance of M. Valleix, into two diseases, which, when existing, are generally associated with chronic bronchitis, if not caused by it,—dilatation of the bronchi, and vesicular emphysema of the lungs. M. Valleix throws his diagnostic marks into the tabular form. We select for quotation those distinctive of dilatation of the bronchi from phthisis, confusion being most likely to occur between these diseases. In dilatation of the bronchi, notwithstanding that the disease be of long standing, emaciation is little observable; there are no nocturnal sweats; no hemoptysis; no habitual diarrhea; the physical signs may exist elsewhere than at the summit of the lungs; there is sometimes no indication from percussion, the sound of the chest being normal. In phthisis, there is emaciation dating from the commencement of the disease; there are nocturnal sweats; there is often hemoptysis; diarrhea is a frequent attendant; the seat of the stethoscopic signs is in the upper lobes, and there is a dullness on percussion or abnormal sound of the chest on a level with the tubercular cavities.

M. Valleix is brief on the subject of emphysema of the lungs, believing that the diagnosis is easy to any one who has properly studied this disease, a point on which we perfectly accord with him. Between this emphysema and phthisis, the following are his diagnostic marks. In emphysema, we find a rounded form of some parts of the thorax, or that it is generally dilated; the sound (on percussion) is clear on a level with the rounded portion; there is neither fever nor emaciation. In phthisis, there is neither rounding nor general dilatation of the thorax; the sound is obscure; there is hectic fever and emaciation.

The *treatment* of chronic bronchitis is discussed by our authors; by Dr. Dunglison succinctly, but without the omission of any material point, whilst M. Valleix spreads his details, with a prolixity too common to him, over the wearisome space of 23 pages. The former writer says our remedies must be regulated by circumstances; when there is much febrile and inflammatory excitement, the case must be treated as one of acute bronchitis, however long it may have existed. In ordinary chronic bronchitis, he considers the class of revellents the best. Intermittent counter-irritation by successive blisters, tartarized antimony, croton oil, or the liniment recommended by Dr. Graves, said to be an imitation of that of St. John Long, proves extremely serviceable. We annex the formula of this liniment, though not considering that any special benefit is likely to ensue from it beyond any other counter-irritant.

R. Olei terebinthinæ ʒiij.  
Acidi acetici fortioris ʒss.  
Vitellum ov.;  
Aquæ rosarum ʒ iiss.  
Olei limonis ʒj. M.

Emetics he deems very serviceable, not only in aiding mechanically the expulsion of secretion from the air-tubes, but preventing its too copious reproduction. The ordinary emetics of ipecacuanha and tartarized antimony are the most advisable. Of expectorants Dr. Dunglison does not speak very respectfully, objecting that he has been unable to observe any result from them, which might not be ascribed to their exciting effect on the stomach, and its extension to other parts of the system. We do not,

we admit, see much force in this objection, which in fact does not apply to the curative effect of these medicines, but to their mode of operation. We have found benefit to arise from a proportion of the class of expectorants; but the advantage derived has not been of a nature to render the name, expectorants, suitable to them. They have done good by improving, as it has appeared to us, the condition of the bronchial lining, and diminishing the secretion of mucus from it, not by facilitating its extrusion; and this beneficial effect has appeared to arise from those medicines of the class which possessed a diuretic property, such as squill—an observation at least as old as Boerhaave.

The more stimulating remedies, such as tar-water, creosote, strychnia, balsam of copaiba, &c. are passed in review, but without Dr. Dunglison bestowing much praise upon them. Of tar-water, he says that he has administered it freely, and in cases in which the ordinary excitant expectorants are found to be serviceable, it has afforded relief; but further than this no advantage has accrued from its administration. The following is Dr. Dunglison's receipt for its preparation:

R. Picis liquid. ʒj; digere in aquæ O ij per dies octo et cola. Dose ʒ viij to ʒ xij in the day, mixed with milk.

In Germany, he says, the tops of the *galeopsis grandiflora*, a plant which is supposed to be the basis of a nostrum, celebrated in pectoral diseases under the name of "Blankenheimer thee," have enjoyed great repute. The following is the receipt for the preparation of the medicine from this plant:

R. Summitat. *galeops. grandiflor.*

Rad. althææ aa ʒʒ.

Rad. glycyrrhiz. ʒij. M. A fourth part of this to be boiled in a pint and a half of water, and to be taken daily.

We think it probable that should Dr. Dunglison's work reach a second edition, he will give naphtha a place among the stimulant remedies of chronic bronchitis, and there only.

After some comments on the use of narcotics, and on that of stimulant inhalations, such as those of chlorine, which he says may be inhaled from a common dish by dropping any of the acids on a mixture of chloride of lime so that the acid may be disengaged slowly, he proceeds to consider the climates more suited to the subjects of chronic bronchitis. He thinks Santa Cruz in the West Indies, Hières on the shores of the Mediterranean, and Pensacola in the United States, suitable abodes for such invalids, possessing, as they do, a genial and agreeable climate.

The work of M. Valleix mentions, regarding the treatment of chronic bronchitis, only one remedy that is not noticed in that of Dr. Dunglison, and this remedy comes from the United States. It is the inspiration of cold air, recommended by Dr. Drake, of New York. According to this physician's method, the patient lying in a bath of 98°, or in a warm bed, inspires through a tube the atmospheric air when at a low temperature; or, when this is not the case, air cooled to 40°, Fahrenheit, by means of ice. Its author, Dr. Drake, says, that this remedy is beneficial, principally in warm weather; and M. Valleix hazards the reasonable supposition, that it is the warmth of the weather not the remedy that effects the amelioration.

MM. Blache and Chomel, who have commented on this practice, consider it to be suggested on merely theoretical grounds, and that experience has not as yet confirmed its efficacy: observing how much bronchitic subjects suffer from the inspiration of cold air, we should anticipate from it a different result from that which Dr. Drake professes to have observed.

**HAY FEVER.** This singular and distressing affection is called by Dr. Dunglison "summer bronchitis," and is considered by him as a singular variety of inflammation of the mucous membrane of the respiratory apparatus. We learn from him that it exists equally in America as in Europe. Where a predisposition founded on idiosyncrasy exists, the effluvium of hay in flower may be an exciting cause of this disease; but other emanations, such as the odour of a rose, the bean-flower, &c. may produce it. The well-known irritating effect on the respiratory mucous lining of powdered ipecacuanha manifested itself in a young gentleman of Dr. Dunglison's acquaintance, by every symptom of hay-fever.

The best prophylactics, before the period of expected recurrence, are the cold shower-baths and the internal use of sulphate of quinine and sulphate of iron; but the disease once established, it will run its course, easily aggravated by low diet, much exposure, and debilitating measures generally; though it does not admit of much relief from any measures. A very sensible *lay* correspondent of Dr. Dunglison's, who had suffered from the disease, found some alleviation from prussic acid and black-drop, in small doses three times a day; quiet, "comfortable diet," and repose on a sofa rather than on a bed.

**PLEURISY.** Having shown the very great correspondence between our authors in their practice in several inflammatory diseases of the respiratory organs, we shall continue to trace their opinions through one other disease only of this class—pleurisy, and regarding this merely so far as the operation of paracentesis is concerned. With regard to this operation much doubt pervades the profession in this country at least, and this not merely in matters of detail, such as the precise place where, the time when, or the mode in which the operation should be done; but on the main fact, whether this operation is in any case expedient. We shall proceed to state the opinions of our authors on the question, which we regard as a very important one in all its parts, considering that it may be expedient to call in foreign counsel in a case when domestic opinion is much divided. By many, Dr. Dunglison remarks, all remedies in empyema have been deemed inoperative, and to this effect he quotes the authorities of Willis, Broussais, and Laennec; but at the same time he cites the more hopeful testimony of Dr. Stokes, who has recorded twenty cases of recovery by absorption.

When all remedies have failed and the patient is threatened with suffocation, or suffers much distress from the mechanical pressure of the fluid on important organs, the operation of paracentesis is the last resource; but he adds the important qualification, that absorption being often effected, even in unpromising cases, it has not always been necessary where it has been performed.

M. Valleix quotes largely from a thesis on the operation of empyema, published by M. Sédillot in 1841, containing an account of various operations performed, thirty-seven of which were in cases of pleurisy and non-traumatic pneumothorax. This writer says: "We are aware that

M. Gendrin attempted some years ago, at the Hôtel-Dieu, to apply the operation of empyema to acute pleuritic effusions; *but the constantly fatal result caused him soon to renounce this deadly method.*" Nevertheless, adds M. Sédillot, "should the effusion be considerable enough to bring on suffocation and menace the life of the individual mechanically by its own effect (à lui seul,) we believe that the evacuation of the liquid would give at least time to apply suitable treatment to the pleurisy, and would retard a fatal termination, which at the time was imminent." It seems scarcely necessary to argue on the hypothetical case put by M. Sédillot. What medical man has seen a case of acute pleurisy in which life was imminently threatened by the suffocation induced by mere mechanical pressure of effused fluid, and which said mechanical pressure and its effects could not be speedily relieved by bloodletting, and the other ordinary remedies of pleuritis? On this head, M. Valleix remarks, "That cases of this kind are excessively rare, *even if they exist*, and that there arises a difficulty, which we shall find recurring in another branch of this subject,—that of appreciating exactly the imminence of the danger. We consider, in fact, that threatening suffocation may appear of very different importance to different observers, and that consequently this sign will not serve to establish any positive rule." (t. ii, p. 549.) We have ourselves more than once been summoned to cases of acute pleurisy in the advanced stages, the earlier one having been neglected, that we might give an opinion on the propriety of resorting to the operation; in every case have we been adverse to it, and in favour of the continued employment of the remedies of pleurisy, bleeding, counter-irritation, mercury, diuretics, &c. and uniformly have our views been justified by the results.

Besides that of M. Valleix, we have the authority of Dr. Dunglison for the operation of empyema in acute pleurisy in the following terms: "the operation is not demanded solely in chronic pleurisy. If in the acute form, the effusion takes place so quickly and copiously as to endanger the very existence of the patient, owing to compression of the lungs and other important organs within the chest, it *may* be necessary." It will be observed that neither writer states of his own knowledge that the (apparently) hypothetical case put, has actually occurred, and has been relieved by paracentesis; indeed M. Valleix implies a doubt of the possibility of such a case. Another writer, M. Chomel,\* between whose language on this point and that of Dr. Dunglison, such a correspondence exists, that it might be supposed that the one was derived from the other, is equally silent as to any experimental and practical grounds he has for his opinion. He expresses himself in the following terms:

"Finally, in those cases (of acute pleurisy,) in which the different methods calculated to favour the absorption of the effused fluid have been employed in vain, and where the increasing difficulty of breathing obliges the physician to hazard a dangerous method rather than to allow the patient to perish of suffocation, we may and, in some cases, we ought to attempt the operation of empyema, in spite of the little success which generally attends it." (*Dictionnaire de Médecine*, article Pleurisie, p. 30.)

We have a great dislike to important practices being suggested on purely hypothetical grounds, and of the opinions we have quoted on performing

\* *Dictionnaire de Médecine*; article Pleurisie.



the operation of paracentesis in acute pleurisy, that of M. Valleix comes the nearest to our own,—which is, that it should not be done. We now turn to the consideration of performing it in chronic empyema.

On this head M. Valleix says :

“ We have seen in fact that simple pleurisy, which supervenes on a state of good health, tends naturally to a cure. If then we perform the operation of empyema in a similar case, how can we know whether our success is attributable to it or not? But in the cases contained in the work of M. Sédillot, it is almost always impossible to discover whether the pleurisy is simple or complicated. This is evidently a *lacuna* which ulterior observation can alone fill up, and which it is very important should no longer exist, because till facts have been looked at in this point of view, our discussions will be conducted without object and without profit.

“ We have then, in reality, to guide us in our decision, only the persistence of the symptoms of pleurisy, emaciation more or less marked, occasional lipothymia, threatening of suffocation, &c., symptoms which we often find described in the cases of authors, and among others in those of M. Heyfelder. The occasion then for performing the operation remains to be decided by the judgment of the practitioner.

“ Nevertheless there are certain circumstances which we may regard as counter-indications, and which it is important to indicate here. According to the summary of facts collected by M. Sédillot, there is not a single example of its success in aged persons. The oldest person in whom the operation was successful, was 40 years of age ; all the other patients were young children, youths, or adults not above thirty. The duration of the *pnothorax*, adds this author, is without contradiction, a circumstance unfavorable to the operation, which is owing to the atrophy of the compressed lung ; yet this effect is not constant. Hippocrates fixed on the fifteenth day of the effusion, as the moment of the operation ; but generally we can wait longer. Complications with *tubercles* and *pneumonia* are unfavorable ; it is advisable, therefore, to ascertain the state of the organs, and especially that of the lungs. Nevertheless it is not shown that the existence of some tubercles is an absolute counter-indication to the operation ; the main matter is, I repeat, to ascertain the circumstances in which this operation is *indispensable*, and this is the difficult point. Finally, all that we know is that in a considerable number (*un assez bon nombre*,) of severe cases, this operation has been crowned with success.” (Valleix, t. ii, pp. 549-50.)

The questions seem reasonable, whether any proportion of the successful cases would have recovered without the operation ; and, again, of fatal cases whether the fatality of some of them was not due to the operation. An affirmative answer to either of these questions would deduct materially from the recorded value of the operation. Our own opinion is, that in cases of simple pleurisy occurring in persons in previous good health,—cases which according to M. Louis terminate almost uniformly in recovery, the operation will not only not be required, but if performed be injurious. In another class, constituting a great majority of the cases of chronic pleurisy, those in which the general cachectic aspect of the patient leads to belief of the existence of tuberculation or other disease on which the effusion is dependent, whilst we admit that we have been more successful in their treatment without the operation than with it, and that, consequently, we have, for some time, resorted to it solely as a means of relieving dyspnea and distress, not as a method of cure, we would yet acknowledge that the mass of evidence adduced in its favour by Dr. Hamilton Roe\* is such as

\* Medico-Chirurgical Transactions, vol. ix, p. 196, et seq.

will lead us at least to reconsider our opinion, and it may be to modify our proceedings. Whilst we say this much, and it is no more than it deserves, for Dr. Roe's paper, we yet take the liberty of questioning whether certain of the cases he quotes of inflammatory hydrothorax, by which term is meant, we presume, pleurisy with non-puriform effusion, would not have done at least as well without the operation as with it; in this questionable category the nineteenth case, among others, appears to stand.

**DISEASES OF THE HEART.** Diseases of the circulating system receive, as they merit, ample attention from our authors, occupying about 90 pages of the work of Dr. Dunglison, and one entire volume of above 600 pages in that of M. Valleix. Their account of particular diseases is prefaced by both writers with some physiological remarks on the heart's movements and the sounds with which they are associated.

There is some difference of opinion between British and French physiologists on these points, and M. Valleix presents us with a long disquisition on this controversy, if such it can be termed. After an exposition of the views of the London and Dublin Committees, and a very long statement indeed of the sentiments of various French writers on the same subjects, he gives his verdict in favour of the exposition of the movements of the heart, and the explanation of the sounds with which they are associated, published by M. Beau in the '*Archives Générales de Médecine*.' The following summary of the physiological condition of the heart comprises, with other matter, M. Beau's account of the order of its movements, and the sounds with which they are associated.

"1. *Situation of the heart.* A line traced parallel to the upper edge of the third rib corresponds nearly to the base of the heart and the arterial orifices. Its point beats from two to three inches below the nipple. The right ventricle is situated in part under the sternum, but still more to the left of this bone; the left ventricle is entirely to the left of it. The ventricles, covered in great part by the lungs, are exposed only to the extent of from two to three inches.

"2. *Volume of the heart.* This augments in proportion as we advance in life. It is smaller in the female sex.

"3. *Orifices of the heart.* These are dilated in proportion as we advance in life. They are larger in men.

"4. *Movements of the heart.* 1°, Contraction of the auricles, dilatation of the ventricles, contraction of the ventricles succeeding each other without interval; 2°, rapid influx of the blood into the auricle, then slow continuation of this influx, and at the same time repose of the ventricles; these new series of movements in the same order.

"5. *Sounds of the heart:* *First sound*, due to the shock of the blood thrown by the auricle into the ventricle, prolonged during the dilatation, and consequently after the passage of the blood through the auriculo-ventricular orifice; *second sound*, due to the shock of the blood, flowing suddenly from the veins, against the parietes of the auricles, and corresponding to this influx.

"*Accessory sounds* (bruits de renforcement); ventricular contraction; shock produced by the reflux against the sigmoid valves, of the blood thrown into the large arteries; striking of the heart against the thorax." (Valleix, tome iii, pp. 33-4.)

Dr. Dunglison's views accord with those of English physiologists in general, viz., that the first sound is referrible to the contraction of the ventricles, and the second to the obstacle presented by the semilunar valves to the return of the blood from the arteries into the heart. He considers

these views to have been shown to be, in all probability, correct, by the recent researches of competent observers, Messrs. Pinnock and Moore of Philadelphia.

The opinions of the British physiologists appear to us to exceed those of M. Beau in clearness and simplicity. The difference between these authorities consists in this, that what are considered by the former writers as the causes of the sounds, ventricular contraction in the case of the first sound, and the closure of the sigmoid valves against the reflux blood in the artery in that of the second, are regarded by M. Beau as merely producing accessory sounds; whilst his principal causes are in both cases of the same nature, shock of blood against the ventricular parietes from the auricle in the first sound, the same shock against the parietes of the auricle from the veins in the second. Without professing to decide, where so many doctors disagree, we would merely venture to remark, that the first sound is agreed by almost all to be synchronous with the systole of the ventricle, which is inconsistent with the cause assigned for it by M. Beau; and that in the case of the second sound, the sharp, clacking nature of this sound would naturally suggest the quick closing of a valve, and not the flow of blood from one cavity into another.

We proceed to compare our author's views of certain diseases of the circulating system, and first of pericarditis.

*Pericarditis.* Dr. Dunglison regards acute pericarditis, when occurring uncomplicated, and with all its characteristic phenomena, to be as easily recognizable as any internal disease. These phenomena are as follows:

"After the occurrence of the ordinary evidences of internal inflammation, an acute, pungent or lacerating pain in the region of the heart, under the sternum, which extends towards the epigastrium, and sometimes between the shoulders; a sense of more or less oppression, giving rise to rapidity of breathing, often amounting, in the progress of the disease, to panting; palpitation, irregular, jerking or intermittent pulse; dull sound over the region of the heart; at times, a sound as if two dry surfaces were rubbed against each other, or of the cracking of new leather (*bruit de frottement*, and *bruit de cuir neuf*,) without the existence of any sign of inflammation of the lung or pleura. Incapacity of lying on the left side has been pointed out as amongst the functional derangements most commonly present, (Joy;) but the author has observed it to be very frequently wanting." (Dunglison, vol. i, p. 467.)

We must not, however, always expect symptoms thus clearly marked, or an uncomplicated disease, and we resort to the work of M. Valleix for a more detailed symptomatology of pericarditis to aid us should some of the signs mentioned by Dr. Dunglison be found wanting, pain for instance, which is, according to MM. Louis and Bouillaud, null or very slight in half the cases; or, should complication increase the difficulty of our diagnosis.

M. Valleix relies much as a diagnostic mark on a projection or *vaulting* of the precordial region, pointed out by M. Louis, and which is considerable in proportion to the extent of the effusion. This projection is of an oval form, its longest diameter being from above downwards. It is bounded above by the third or second rib, and below by the eighth or ninth. When the effusion is rather considerable, the intercostal spaces are

widened by the raising of the ribs, and their concavity is effaced, or even is replaced by a slight convexity.

Percussion performed over the precordial region returns a dull sound to an extent rather beyond that of the manifest projection or vaulting. This dullness is at its *maximum* about the middle of the projection, that is to say, on a level with the fourth rib, where there is felt a very marked resistance, observed principally by M. Piorry. This author has likewise remarked that the dullness in sound is heard over a less broad surface in proportion as we proceed in our examination from below upwards; and that it in some degree changes its place, (as might naturally be conceived from its cause,) according to the position of the patient. By auscultation we perceive that the respiratory murmur is completely *null* in the centre of the precordial region, but that it becomes audible, though distant, in proportion as we approach the circumference of the effusion. The sounds of the heart are heard at a distance, unless the effusion be very inconsiderable. They are more distinct on a level with the third rib, or little below it, than in the centre of the precordial region, which proves that in pericarditis the heart is somewhat lifted above its ordinary position. They are generally not affected in character; but they are more dull, more difficult to perceive than in the normal state, which arises from their remoteness from the ear, and the interposition of fluid. In some cases there is heard a bellows-sound, totally distinct from any of the pericardial noises to be afterwards adverted to. M. Bouillaud ascribes this either to endocarditis producing thickening of the valves, or *coagula* in the interior of the heart. Dr. Hope ascribed it to augmentation of the intensity of the pulsations of the heart.

The pericardial sound first pointed out by M. Collin under the name of "sound of new leather," (*des Diverses Méth. d'expl. de la Poitrine*, Paris, 1824,) was rarely observed for some years after its discovery; but this seems to have arisen from parties expecting a noise precisely similar to that adopted by the discoverer to illustrate the character of the cardiac sound, whereas there is much variety in the sound, and it may be, in many cases, more aptly compared to the noise produced by rubbing two surfaces together, to that of rasping, or of parchment, &c., than to that in which M. Collin first found its similitude. It is always very superficial, and ordinarily accompanies both sounds of the heart; but is generally stronger during the first than the second sound. M. Collin thought it was owing to the dryness of the serous membrane before the effusion took place; and it is the fact that when the accumulation of serum becomes considerable this symptom disappears, though it may have previously existed to a very great degree. The general opinion, however, now is, that it depends on the friction against each other of two false membranes, more or less rough and dense.

On the subject of causes of pericarditis, M. Valleix remarks that the coincidence of inflammation of the pericardium with acute articular rheumatism is a remarkable fact, which, although indicated by Sydenham (where?) and later by M. Chomel, has been better established by M. Bouillaud.

This is one of the small traits of nationality of which other examples are to be found in the work of M. Valleix. Why, the connexion between

rheumatism, pericarditis, and other affections of the heart has been familiarly known to British practitioners from the early part of the present century, and was mentioned *by at least three writers of this country prior to any publication of M. Chomel on the subject*: viz., Dr. Davis of Bath, in 1808; Sir David Dundas (*Med. Chir. Trans.* vol. i.) in 1809; and Dr. Wells (*Trans. of a Society for promoting Med., &c.*) in 1812; whilst M. Chomel's work on Rheumatism was published in 1813, and the article on the heart in the '*Dictionnaire de Médecine*,' the conjoint work of himself and Béclard, in 1822. In a work published by M. Bertin on Diseases of the Heart, in 1824, of which M. Bouillaud, to whom so large a share in establishing the connexion in question is ascribed, was the editor (redacteur), not a word is said of any connexion or coincidence between rheumatism and affections of the pericardium or heart!

The treatment advised by Dr. Dunglison comprises, as might be presumed, bloodletting freely practised so as to make a decided impression on the system, and to be repeated if the state of the patient render it necessary, along with cupping or the application of leeches. Simultaneously with the bleeding, he gives a solution of tartarized antimony combined with tincture of digitalis (half a grain of the former medicine and ten drops of the latter,) four times a-day. He was of opinion that a very serious case of rheumatic pericarditis, combined with endocarditis, was cured by the "*sedation*" induced by the acetate of morphia, causing insupportable nausea, which did not entirely cease for forty-eight hours. Should the disease not yield speedily, he would employ mercurials, giving two grains of calomel, and one eighth of a grain of acetate of morphia, every four hours.

The proceedings advised by M. Valleix do not differ materially from those of Dr. Dunglison as to the mere depletory parts; when he comes, however, to consider the administration of mercury he finds himself unable to decide between the opinion of Dr. Hope, whose mode of administering the mineral in this disease he quotes at considerable length, in its favour, and those of M. Gendrin, who has no confidence in this mode of medication. "How to decide," he asks, "in this clash of opinions? If we had from both parties facts in support of opinions we might arrive at some conclusion; but between two simple assertions it is impossible to decide; and this is a fresh proof of the bad method employed in the study of therapeutic questions."

Thus far we would agree with M. Valleix, that a return from each party of cases treated with mercury, comprising the cures and the failures, would have been of much value towards the decision of the question, although admitting that our own opinion founded on observation of the effect of mercury on pericarditis and other inflammation of fibrous membranes would lead us to coincide, in this respect, rather with Dr. Hope than M. Gendrin.

Most writers, such as Hope, Bouillaud, &c., recommend blisters to the precordial region to promote absorption when the febrile symptoms begin to subside. But M. Gendrin relies upon them as a main curative means, suggests that they should be multiplied according to the violence of the disease, and that they should always be of great size. The same writer advocates (perhaps not with much consistency,) the employment of seda-

tive topical applications, especially very cold water or ice when the pains are very extreme, the palpitation very violent, and the anxiety great. M. Gendrin, however, regarding the safety and innocence of this mode of medication as not absolutely demonstrated, recommends great prudence in its employment, whilst M. Valleix says that we ought to act with so much the more circumspection as these means are of very questionable value. The remarks of the author of the practice taken in conjunction with those of his commentator would entirely lead us to let it alone altogether.

**ENDOCARDITIS.** We turn now to the subject of endocarditis, which is treated of by both our authors, but under different names, for Dr. Dunglison, considering that the endocardium cannot be affected with inflammation without the muscular substance of the heart participating, treats of it under the head of carditis, whilst M. Valleix considers it, and we think properly, as an independent disease, discussing the very rare disease, carditis, apart. We question whether Dr. Dunglison might not, on the grounds he has assigned in the case of endocarditis, have considered pericarditis also under the head of carditis.

M. Valleix considers that the symptoms of endocarditis are very obscure and inconstant; that of those assigned to this disease a proportion may be absent in any given case, and that those present may arise from another disease. The following are, according to him, the positive signs of acute endocarditis: it ordinarily arises in the course of an acute disease; it is attended with uneasiness, pain in the precordial region (this symptom is often wanting,) and anxiety; dullness of sound to a small extent on percussion; considerable (notable) augmentation of impulse; sounds of heart obscure, the pulsations being sometimes irregular; bellows or rasp-sound. According to Dr. Dunglison, the bellows-sound is one of the most characteristic and constant of the phenomena of endocarditis, and is at times so great as to mask one or both of the sounds of the organ. The impulse of the heart against the chest is generally so forcible and superficial as to be distinctly seen and readily recognizable by the hand. The pain is commonly very slight, and in many cases he has observed none whatever, nor is the dyspnea urgent. The *dullness of sound on percussion* in endocarditis is distinguished by both writers from that attending pericarditis by its greater extent in the latter case, whilst the *pulsations of the heart* are very forcible and superficial in the former disease, indistinct and remote in the latter.

Both writers divide the disease into the acute and chronic form, and they may be said to be in accordance as to its treatment, for Dr. Dunglison says it ought to be the same as that of pericarditis, whilst M. Valleix, without employing this expression, mentions the same remedies and passes similar comments upon them, as when discussing this disease.

**HYPERTROPHY OF THE HEART.** That too familiar disease, hypertrophy of the heart, receives much attention from our authors. The subject of its etiology, which we cannot help thinking a very obscure one, is considered by each but in a different spirit, for Dr. Dunglison seems much more satisfied with the mechanical causes ordinarily assigned than does M. Valleix. The mechanical causes mentioned by the former writer are affections of the orifices of the heart narrowing them and giving occasion to more powerful

contraction of its muscular fibres, insufficiency of the valves permitting reflux of blood, and narrowing of the arteries emanating from the ventricles, by fibrinous or ossific matter. This last condition the author considers to be much more frequent after acute rheumatism. Among causes of a different description he notices inflammation of the pericardium, palpitation and too much action of the heart however induced.

M. Valleix looks at these matters with a more scrutinizing eye. M. Beau having found many cases of hypertrophy in which adhesion of the pericardium, so strait that the play of the valves of the heart might be impeded by it, existed, has considered such adhesion a cause of this disease, and similar observations have been made by Dr. Hope. Certain unedited researches, however, submitted by M. Louis to our author, prove that adhesion of the pericardium to the heart has not been met with in any considerable degree more frequently in diseased than in healthy hearts. In reference, too, to a supposed cause, mentioned by Dr. Dunglison, as it had often been by others, contraction of the cardiac orifices, M. Valleix again quotes Louis to show that the original observations of this excellent writer, and those which he has taken pains to gather from others, demonstrate that in three fifths of recorded cases there existed no connexion between lesions of the lining membrane of the heart, either at the orifices or other points of its entire extent, and the production of hypertrophy either with or without dilatation. Against a very common supposition that an obstacle opposed to the circulation by any chronic disease of the lungs is an ordinary cause of this affection, we have the high authority of Louis, conjointly with that of M. Bizot. These gentlemen have found in the phthisical, whose lungs were so studded with tubercles as to be scarcely permeable to air, the heart, so far from being hypertrophied, considerably diminished in volume. The same result ensues when a cancerous formation is opposed to the passage of the blood through the lungs. M. Valleix considers pulmonary emphysema to be at once a predisposing and exciting cause of hypertrophy of the heart, as the researches of M. Louis have shown. (*Rech. sur l'Emph. M. de la Société d'Obs. t. i.*) Should emphysema of the lungs exist for a certain number of years, this disease is sure to display itself, without any other especial cause, and to make more or less rapid progress. After some remarks on what are considered mental causes, and such circumstances as violent exercise, and addiction to spirituous liquors, and after censuring the phrase of Dupuytren, "*nutritive irritation*," and we think justly, for it is a mere pompous expression, not an explanation of the fact, that hypertrophy often arises without *assignable cause*, he concludes with the true remark that the subject requires more investigation than it has received.

We do not feel disposed to follow our authors through a field so much trodden as the symptoms of this disease or its influence on other organs besides the heart, or through certain discussions on the propriety of the division of this affection, generally adopted since the publication of the work of M. Bertin, into simple, concentric, and eccentric, but proceed to consider their remarks on treatment.

Bloodletting is the first remedy mentioned by both; but neither of them would carry it to the extreme recommended by Valsalva and Albertini for aneurism, under which these writers classed the affection in question,

especially when it was associated with dilatation, or (to use another expression) when of the eccentric form. Dr. Dunglison would limit to one his general bleeding, preferring after this to have the conjoint benefit of the depletion and revulsion of leeches to the precordial region. But M. Valleix, although not neglecting local bleeding, either from the precordial region, or, should ingestion of the liver demand it, from the vicinity of this organ or the anus, allows repeated general bleedings. He, moreover, dissents from a caution given by Dr. Hope against any considerable bloodletting where much dilatation is associated with the hypertrophy, alleging abundant and recent authority for its beneficial effects under such circumstances.

Both our writers recommend abstemious diet (though neither of them would push abstinence to the extreme of Valsalva or Albertini) and repose; indeed a better summary of diet and regimen for this disease cannot be anywhere found than is presented to us by M. Valleix. These are his words:

"Take only a small quantity of light food; abstain from wine and strong liquors; avoid violent mental emotions, and take only moderate exercise and especially passive exercise."

Sedative medicines find a place, of course, among the means recommended by our authors, and digitalis is one of these remedies suggested. Dr. Dunglison associates it with hydrocyanic acid, M. Valleix (on the authority of Goelis) with laudanum and succinate of ammonia, especially in the palpitations of children. The former places among remedies for this disease of the sedative class, acetate of lead given in conjunction with the sulphate or acetate of morphia, (two grains of the acetate of lead with one third of a grain of either of the other salts three times a day,) but he admits that this combination is less efficacious than the other sedative medicines he has named.

Diuretic and cathartic medicines find a place among the remedies of hypertrophy mentioned by our authors; but they both, without expressly saying that their employment should be limited to cases where hydropic symptoms are associated with the main disease, declare that there they find their most appropriate application. Among the diuretics, equally as among the sedatives, digitalis holds the first place with both writers. Dr. Dunglison advises that it should be combined with calomel, squill, or colchicum. Among cathartics, M. Valleix recommends camboge, aloës, jalap, and extract of colocynth; whilst Dr. Dunglison mentions with commendation (on the authority of Dr. A. T. Thompson), that first of hydragogues, elaterium, which finds no place in the *codex medicamentorum* of M. Valleix.

This last writer concludes the section of his work now under consideration, by passing in review what he calls the medicines intended to act directly on the hypertrophied tissue. This portion of his work instantly attracted our earnest attention, for we had long been anxious to discover something capable of fulfilling so laudable an intention. When we found, however, an enumeration of sundry mineral waters, such as those of Vichy, Carlsbad, Ems, and Seltzer, and, besides, were assured, on the authority of Kreysig, that copious potations of pure water must be very efficacious



in hypertrophy because they cured diseases so analogous to it as schirrus and cancer (!), the feeling of hopefulness with which we commenced the perusal of the paragraph was by no means augmented.

*Dilatation of the heart.* This also obtains notice from our authors; from M. Valleix as an independent disease, if he can be considered as at all admitting its existence; but from Dr. Dunglison, as a condition of atrophy of the organ. M. Valleix says it is so rare that M. Louis has not met with a single case of it, and, though William Hunter, Lancisi, Burns, Corvisart, and Laennec have mentioned examples of it, unfortunately, whilst they have said that the heart was dilated, and its parietes attenuated, they have not entered into details sufficiently ample to permit others to form a precise opinion.

We hold that this is not only an existing disease, but one of much more frequent occurrence (at least in the country) than the sceptical tone of M. Valleix would lead any one to suppose. Its symptoms may be stated to be: Dullness on pericardial percussion over a considerable space; feeble impulse of the heart; its sounds *normal*, very clear, and distinct; feeble, soft, and compressible pulse; great tendency to coldness of the extremities; stasis of blood in the venous system, and an extreme tendency to anasarca.

The treatment of this form of cardiac affection recommended by M. Valleix is by tonics, especially preparations of steel; but he adds, we must not hesitate to bleed, should the stasis of blood be considerable. Our experience tells us that there is no disease of the heart in which the difficulty of affording relief is greater than this; we have ever found hypertrophy and its complications more susceptible of amelioration. A course of tonics, and, at the same time, giving freedom to secretion by hydragogue purgatives and diuretics, we have found the most safe and beneficial proceedings. Bloodletting, though it may afford some temporary relief, is generally a measure of questionable propriety.

The views of our authors on the treatment required where the cardiac valves are affected admitting of inference from the sentiments they have promulgated on other diseases of the heart, we shall not pursue their labours into this branch of the subject, neither do we purpose passing in review their opinions on diseases of the blood-vessels. Having, therefore, brought to a close the notice we intended bestowing on the portion of their works which has reached us, it remains that we should express an opinion of their respective value. They are both of them good books, but of different kinds, for whilst the work of Dr. Dunglison is a hand-book of easy practical reference, apparently intended for the guidance of the youthful and inexperienced; that of M. Valleix consists of a series of complete treatises on diseases, comprehending what may be termed our present knowledge of the subject, and showing the various modes of practice inculcated by, at least, the best French authorities of the day. Both will prove valuable additions to any library, for the knowledge seized for immediate use from the pages of Dr. Dunglison may be subsequently "*supplemented*" from the more elaborate descriptions of M. Valleix.

## ART. XV.

*Excentricités Chirurgicales, ou Nouveaux Mémoires pour servir à la réforme et au perfectionnement de la Médecine Opératoire.* Par MATHIAS MAYOR.—Lausanne, 1844.

*Surgical Eccentricities, or New Memoirs for reforming and perfecting Operative Medicine.* By MATHIAS MAYOR.—Lausanne, 1844. 8vo, pp. 420.

THIS is a would-be-quaint emanation from an egotistical French brain; not calculated, we fear, to achieve the improving and perfecting of the *Ars Chirurgica* so mightily as the author fondly imagines.

There are fifteen memoirs in this book, all purporting to be very original and very important. The first is entitled "Experience unmasked;" and M. Mayor begins by telling us that, though at the first blush it may seem an ungenerous and perhaps unwarrantable task to take liberties with so grave and venerable a personage as Experience, yet that after all it is no more than right and proper; seeing that he had announced to the scientific Congress of Angers, several years ago, that Experience in Surgery, whatever it may be in other matters, is a nuisance and a mischief, and should be put down—a humbug, and ought to be exposed. The word, it seems, is wrong, because its meaning cannot be accurately defined, and is not generally agreed upon; therefore it ought to be abolished. Much in the same way, we have heard an ingenious friend of ours labour hard to show that the term "Inflammation," is more than ripe for change. But without any pretensions to the absolutely prophetic, we would venture to foretell that both Experience and Inflammation will continue for ages yet to come.

Into an unprofitable discussion on the meaning of words, we have no intention to follow the author. Experience, used as a ground for Empiricism in the healing art, is certainly a thing most wrong and dangerous, and deserves all the abuse we find here heaped upon it. But Experience, used as it ought to be,—and every intelligent practitioner is presumed to know how—is by most men held to be of no inconsiderable value. Why, if, according to M. Mayor's own showing, Experience had done nothing more than tell us that "sulphur cures the itch," the boon were surely worth receiving, and being thankful for, withal. Loud and blustering though M. Mayor is in the expression of his dislike to "Experience in Surgery," may we hope that he will not quarrel with us for venturing to state our belief, that he would be no worse, as man, surgeon, or author, did he possess a little more of that despicable material; unless, indeed, he wish to class himself among those to whom experience teaches nothing.

The second chapter is entitled, "A Sketch of the Principles of Surgery, regarded as a Science and Art." The memoir opens with the general affirmation, that although the treatises on Surgery are voluminous and many, and for the most part written by justly celebrated men, still it is too true that one and all of them leave much for us to desire. M. Mayor declares it to be a matter of the last importance to forearm readers, especially students, against the prodigious activity of authors, which, instead of advancing the interests of science, tends only to perpetuate errors which have already acquired too deep a root. We might here remind M. Mayor, that he too

has written a book, and suggest to him, that although its tendency be not to perpetuate old errors, it may possibly have the effect of creating new ones. But we pass from this to express our agreement in his statement, how that a man must be well grounded in the principles of science before he can, with any chance of advantage, occupy himself in promiscuous reading. He must have the means of distinguishing between sense and foolishness, justness and fallacy, truth and error. And these means are the product of a sound education, enhanced by a well-formed habit of thinking. Such readers alone should peruse the work of M. Mayor. To all others it is obviously unsafe.

Having made the general observation that the literature of Surgery is large, and noticed that there are many errors therein contained, M. Mayor boldly tells us, that to discover these errors and root them out, is the object which he has in view. And forthwith he sets to work with a ten-toothed instrument of extirpation, that is, he considers this subject under ten heads. In the first place he most decidedly objects to the use of the phrase "*Chirurgie médicale*," for, says he, if there is a "*Chirurgie médicale*," then there must be a "*Médecine chirurgicale*," and this because the physician bleeds in pneumonia, applies the moxa in sciatica, and prescribes cupping in cases of cerebral congestion. All this, according to M. Mayor, is stuff and nonsense. He reforms by using the adjective "*mécanique*;" for when it is associated with the word "*médecine*," then "*tout à coup*," we have Surgery proper! "*La médecine mécanique*" (Surgery proper,) is a very different thing from "*la chirurgie médicale*," and thoroughly distinct from "*la médecine*," properly so called! This will serve for a sample of the author's efforts in the "improvement" department. And the following may be taken as a favorable specimen of the modest and becoming spirit in which he is pleased to speak of his own labours: "I enter on my subject," says he, "with the sweet prospect of making, by what I shall say in regard to operative medicine, a great and favorable sensation, and of affording an example of the true way of viewing, studying, comprehending, and criticising all other medicine or medications, however multiplied, varied, eccentric, complicated, or pretending they may be."

At the end of eight pages he finds himself in a condition to define the word Surgery, thus: "it is the science which tends to prevent, cure, or alleviate disease by the employment of mechanical means." This constant harping on *mechanics*, with an apparent wishfulness to tie us down to them, is surely a movement to the rear; tending to bring us back to the olden time when our profession was purely one of handicraft. From such reforms, we hope to be delivered, by the continued prevalence of enlightenment and common sense over bigotry and egotism.

The third chapter treats of the dressing of sores. M. Mayor finds fault with all plans but his own. And his is by the application of "impermeable dressings;" the virtue of which is obviously attributable to the compression which they exert. In this country the profession is already sufficiently alive to the efficacy of treating *certain* sores by compression. Accordingly we refrain from entering further upon this topic; even although M. Mayor tempts us largely, by informing us how he has approached the subject fully equipped; with the aid of "logic and reason, art and the means it supplies, principles and the mode of applying them, observations

and facts, analogy and induction, theory and practice, free examination and great good sense!"

The fourth chapter treats of "Tachytomic," or the art of cutting rapidly. Believing as we do, thoroughly, and maintaining still, as we have always done, that surgery is not the mere mechanical art that M. Mayor, and some others, would have it to be, and that the *tuto* is infinitely preferable to the *celeriter* in all cases in which the use of sharp instruments is required, we will readily be excused, no doubt, from further consideration of this topic. Contenting ourselves with simply stating, that in our opinion, M. Mayor has done less than nothing to advance true surgery, by lending the weight of his authority, *quantum valeat*, to move that art in a sinister direction. There is to be found from time to time decided evidence of a leaning towards, if not a fondness for, a worse than meretricious display of doubtful dexterity in the rapid performance of operations, more especially among the junior members of our profession; against this, as opposed to science, surgery, and sense, we have ever set our face strenuously; and we protest solemnly against any countenance being shown to such pseudo-chirurgery, come from what quarter it may. We have the worst opinion of those who are ever inventing new cutting instruments, and vaunting of rapidity and skilfulness in using them. Such, however, is the theme of M. Mayor in this chapter; and we can only say that we profoundly regret that it is so.

The eighth chapter is devoted to "Calomel and Cotton, considered as topical applications in Ophthalmia." "Whoever has been at Lausanne and seen how the dressing department is conducted in the hospital there, or whoever has cast his eye over my works, must be aware that I make extensive use of cotton and wadding." Having given a list of the cases in the treatment of which he employs these substances, and detailed the steps by which he came to use the former in the treatment of ophthalmia, he says,

"The good effects of this precious vegetable production in a considerable number of irritative and inflammatory affections, left no doubt in my mind as to its being possessed of *contrastimulant* properties, and consequently that it would prove an efficacious remedy for analogous diseases situated in or around the eye. I have twenty times caused oculists and other men of art to feel a kind of anxiety, by placing a tompion of cotton between my eye and eyelid, and retaining it there for several seconds. Great was their surprise, however, on remarking that the proceeding did not even give rise to lachrymation."

Being thoroughly assured on this head, and being likewise aware of the modifying power of calomel in inflammations in general, and in affections of the mucous membranes in particular, M. Mayor thought he could not do better than associate the calomel with the cotton, and employ them united in the treatment of Ophthalmia. His method of applying this "quasi specific" is as follows:

"The patient's head having been thrown well back, the surgeon, or an intelligent assistant, opens the eyelids fully, everts them if necessary, and keeps them widely separate. A second person then sets about filling the space of separation with calomel in powder, sprinkling it over the affected part with a brush. The same assistant, or, what is more expeditious, a third person, places immediately over this powder and between the eyelids a roll of cotton, about an inch in length, and two or three lines in diameter. In order to accomplish this last part of the

operation conveniently, the two ends of the piece of cotton are laid hold of with the finger and thumb of each hand, and slightly twisted between the fingers. These are then carried to the two angles of the lids; and then both the cotton and the calomel are placed immediately in contact with the membrane of the globe of the eye, and that which lines the eyelids."

The stuffing may be renewed once or twice in the twenty-four hours; and so little pain does it occasion, that even infants submit to the process without repugnance. M. Mayor has seen obstinate ophthalmia yield to this treatment in a day's time.

We find one of the longest memoirs headed "On the rapid cure of Anchylosis:" an attempt not to bolster up merely, but positively to laud the abominable system of treatment advocated by M. Louvrier, which we have already condemned in no measured terms in this Journal. But here we really feel constrained to take leave of our author. It were neither comely nor profitable to take chapter after chapter, and phrase after phrase, for the sole purpose of abuse and condemnation. Our reading of this work was begun with high expectations; and we have sustained proportionate disappointment. We hoped to have given both a full and favorable review of it; but for reasons too obvious and many, we have found ourselves unable to give either. Where we cannot approve, even in some degree, we prefer to be altogether silent.

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#### ART. XVI.

*An Inquiry into the Physiological and Medicinal Properties of the Aconitum Napellus.* By A. FLEMING, M.D. President of the Royal Medical Society of Edinburgh.—London, 1845. 8vo, pp. 160.

WE were ageeably surprised by the contents of this book. Inaugural essays are for the most part at best the compilations of pains-taking able students; but this is an original examination by a careful and judicious observer of the effects of a powerful medicine, and is of importance not merely as illustrating the action of a single remedy of great power, but the action of a large class of medicines of which this may be taken as the type. Although we may neither admit that the Brunonian theory or the modern Italian improvement upon it explains the action of all medicines, yet we may accept as pretty true the leading principles of both, and yet conclude that neither explains the whole matter. We cannot believe with Brown that all medicines act as stimulants, but we agree with him that a large number of medicines produce indirect debility by having first occasioned over-excitement: and we freely agree with Rasori and Tommasini that there are remedies (contra-stimulants) which depress the vital powers at once without having first excited them. If this latter principle were doubted the facts related by Dr. Fleming of the action of aconite would supply convincing proofs of its truth; and as this medicine is a simple contra-stimulant, that is depressing the living power without previously exciting it, it is worth careful consideration. It gives us an opportunity of studying the symptoms of pure debility, which we need not say in practice is of great importance, as nothing is more difficult than to decide whether certain symptoms depend on mere weakness and require direct support,

or are the result of indirect debility produced by over-excitement, and demand the opposite treatment.

When aconite is given to an animal it produces at first weakness of the limbs, and staggering and slightly quickened or else laborious breathing. The muscular paralysis increases, and there is loss of general sensibility; the animal lies down on his side with his limbs relaxed; he becomes blind; the breathing is slower and more imperfect, and, after a few spasmodic twitches, "death from asphyxia ensues." On examination immediately after death the heart is found beating strongly for some time, and the peristaltic action of the intestines continues. The voluntary muscles are less easily excited to contraction by mechanical irritation. The right side of the heart and the venous system are gorged with blood. The aconite produces no increased vascularity of the part to which it is applied. It acts most rapidly when introduced directly into the circulation; it produces no effect when applied to the skin; and acts with less energy when taken into the stomach than when introduced into a serous cavity or into the cellular tissue.

It acts in vegetables by depressing their vital powers. "A healthy plant, whose root is introduced into water impregnated with it, speedily begins to fade; its leaflets lose their freshness, hang over the edge of the glass, and soon shrivel and die."

When a small piece of the root is chewed, the flow of saliva is increased, and heat, tingling, followed by numbness of the lips and tongue, and a less free motion of the lips. "Its topical application is, as far as I have seen, unaccompanied either by pain, redness, or swelling, even when the physiological effects are developed to the fullest extent." When the ointment is applied to the conjunctiva, *contraction* of the pupil takes place and continues many hours: when applied to the temple or forehead, the pupil became, in two cases, dilated, attended with partial blindness. The reason of these opposite effects does not seem clear.

Its effects in medicinal doses are considered under four heads:

*First degree of operation.* Half an hour after a dose of 5 minims of the tincture, warmth is felt in the stomach, with slight nausea and oppression of breathing, followed in ten minutes by general warmth of the body, and numbness, tingling, and a sense of distension of the lips and tongue, continuing from one to three hours. Slight muscular weakness, with indisposition to exert either mind or body. In half an hour more, the pulse is weaker; and in another hour both pulse and breathing are slower, (say from 72 pulsations to 64, and respirations from 18 to 15 or 16.)

*Second degree.* After a second dose of 5 minims, two hours after the first, or after one dose of 10 minims, the symptoms are more severe and follow more quickly. Tingling down the arms, impaired sensibility of the surface, pulse 56, smaller and weaker, respirations 13, and labouring; great muscular debility, giddiness, and dizziness when standing, lethargy, unwillingness to be disturbed, and cold extremities. The symptoms last from three to five hours, and leave the patient languid.

*Third degree.* After another dose of 5 minims, two hours after the last, general warmth, with numbness and tingling spread rapidly over the body. Diminished sensibility of surface, countenance pale and anxious, headache, vertigo, dimness of vision, and muscular feebleness increased, voice weak,

often a dread of approaching death, pulse occasionally falls to 40 or even 36, but more frequently rises to 70 or 80, and becomes small, weak, and irregular. Respiration irregular, short, and hurried, or deep and sighing. Surface moist and more cold. Sickness may come on. These symptoms do not subside for a day or two.

*Fourth degree.* If the medicine is continued, prostration increases, countenance sunken, sensation as if sinking from loss of blood, pulse smaller, weaker, and more irregular; breathing more imperfect; surface colder and covered with a clammy sweat. Consciousness usually remains. If the action is carried to a fatal extent, the individual becomes entirely blind, deaf, and speechless; pupils dilated, general muscular tremors, or even slight convulsions, pulse imperceptible, surface more cold, and after a few hurried gasps, death by syncope.

Of course, these symptoms do not occur in the same uniform manner in all cases.

The symptoms above enumerated indicate that aconite depresses the vital powers of the brain and nervous system of animal life, and of the heart and lungs. The languor and unwillingness to be disturbed by questions are symptoms of depression of the mental powers; the diminished sensibility of the skin, dimness and confusion of sight, or blindness and slight deafness, and the prostration of muscular strength, mark the weakness of the powers of animal life. The pulse at first diminished in strength, volume, and frequency, and at a later stage quicker and irregular, and respiration becoming in proportion slower and more laboured, show the debilitating action of aconite on the heart and lungs. The analogy between these symptoms and those produced by loss of blood strikingly confirms this view. The vertigo, tinnitus aurium, headache, and slight confusion of mind, are head symptoms common to both, and seem to be produced by a diminished flow of blood to the brain, as their severity is in proportion to the depression of the circulation, and they are aggravated by the erect posture.

Dr. Fleming draws many practical inferences from these premises. Such conclusions, before they are confirmed by actual experience, are not of great importance. It cannot, however, be doubted that aconite is a powerful antiphlogistic, and that its use is contraindicated in all states of the system depending on a debilitated state of the vital powers.

Death from aconite, as it has been observed in well-authenticated cases of poisoning in man where the fatal result was generally protracted for some hours, is produced by syncope. The symptoms have been described. In animals, where such a dose was given as produced death in a few seconds, it could not be attributed to syncope, as the heart's action continued after death; and not to asphyxia, as an animal may sustain complete suspension of breathing for at least three minutes. Whether we get nearer the truth by attributing death to "a powerfully sedative impression on the nervous system," as Dr. Fleming does, we will not attempt to decide. In animals where death is occasioned after an hour, it seems produced by asphyxia, as the heart after death is found beating, and there is engorgement of its right side. In cases of poisoning in man, the appearance of the symptoms depends on the nature of the preparation and state of the stomach. In one case where the tincture was taken, the symptoms appeared in a few minutes; in another, where the root was eaten, and there was food in the

stomach, no unpleasant sensation was experienced for three quarters of an hour. Two drachms of the root, less than one drachm of the tincture, and four grains of the alcoholic extract have proved fatal. The treatment of poisoning (after vomiting) is obviously by stimulants. Brandy and hot water, and ammonia, with friction with warm cloths, especially along the spine.

*Therapeutic action of aconite.*

1. *Neuralgia*. Dr. Fleming has prepared a table of 40 cases: 10 of these have been published by others, and they are all permanent cures; of the 30 cases which fell under his own care, there were 17 permanent cures, and 13 where the relief was only temporary. In some of these the medicine was used internally, in others externally, sometimes both. Dr. Fleming suggests that if the neuralgia depends on inflammation either in the painful part of the nerve or further up in its course, or in sympathetic irritation, the internal use is more likely to be beneficial; if from local functional irritation, the topical application. Unless, however, there are well-marked indications of increased action of the vascular system, we should doubt the expediency of employing internally, in the first instance, so powerful a medicine. Should its external use fail, then (if there are no contra-indications) it might be given internally.

"I have met," says Dr. Fleming, "with several cases of neuralgia, in which the individuals had, for weeks or months, been in the habit of procuring sleep, and a temporary cessation of pain by opiate draughts, and who, on using the aconite, obtained permanent relief from the disease."

Dr. Fleming has tried it in 40 cases of *toothache*, by rubbing the gum with a few drops of the tincture, or by introducing a piece of cotton soaked with a drop or two into the carious tooth. In 7 of these it failed; in 6 it succeeded only for a short time; in the rest the relief was complete.

Of 15 cases of *headache*, 10 were relieved. Three of these were cases of nervous, four of plethoric, and three of rheumatic headache, that is headache of all kinds. We are all obliged often to treat this symptom empirically, and where it is troublesome, and there are no clear indications to the contrary, and attention to the stomach (the greatest source of headaches) has failed, there seems no reason why the external application may not be cautiously tried. A case is given in which the neuralgic pains attending aneurism of the abdominal aorta were somewhat relieved by its internal use.

2. *Rheumatism*. Störck first recommended aconite in acute rheumatism, and it has since been employed with success by many German, Swedish, and Swiss physicians.

Dr. Fleming exhibits in a tabular form 22 cases, 7 of which have been published by Lombard and Chandru, the others fell under his own care. The average period of cure was 5·6 days, the usual duration of treatment being about a fortnight or three weeks. In 3 cases a complete cure was effected in two days, in 1 in three days, and in 6 in four days. "The improvement following the administration of aconite is often very speedy, some alleviation of the pains being occasionally experienced in the course of an hour after the first dose has been taken, while there are few cases in which decided relief, with abatement of the redness, tension, and tenderness is not obtained in a few hours." Two only of the cases given were compli-



cated with heart symptoms, and in both these had been observed before aconite was taken. Bouillaud, who bled largely, found one half of his patients had some heart complication in the first five days; and Dr. Macleod, who bled also, found symptoms of pericarditis in one fourth. "Thus," adds Dr. Fleming, "aconite not only effects a cure in a shorter period than any other mode of treatment, but appears to possess the great negative advantage of not increasing the liability to extension of the disease to the membranes of the heart. Indeed it seems rather to protect the patient from that dangerous complication." We fully agree with Dr. Fleming that "should more extensive trials confirm the conclusions drawn from the limited data here offered, its great superiority over the other ordinary modes of treatment will be undeniable." Dr. Fleming states that he has found it efficacious in the great majority of cases of chronic rheumatism, and that it possesses the great negative advantage of not weakening the strength, and impairing the constitution of the patient. Ten cases are given in a tabular form of lumbago, all of which were speedily cured by the internal use of the tincture combined with its external in some of them.

Mr. Liston has recommended aconite in erysipelas, and Dr. Fleming has employed it with marked benefit in several cases. In one case severe erysipelas of the leg of six days' standing was subdued in two days, and the pain in seven hours.

"The *tinctura aconiti* is prepared thus: Take of root of *A. napellus* carefully dried and finely powdered, sixteen ounces troy; rectified spirit, sixteen fluid ounces; macerate for four days; then pack into percolator; add rectified spirit, until twenty-four ounces of tincture are obtained." (p. 80.)

"I prefer," says Dr. Fleming, "the tincture for internal administration, from its greater uniformity of action.

"As an anodyne, antineuralgic, and calmative, five minims ought to be given at first three times daily, to be increased daily to the extent of one minim each dose, until the physiological effects described under the second degree of operation have been produced. As an *antiphlogistic*, five minims ought to be given at first, and repeated in four hours, by which means the second degree of operation will, in all likelihood, have been induced. In order to sustain the sedative action, thus developed, two and a half minims are to be given every three or four hours, or less frequently, according to the effect produced. Where this mode of administration is adopted, it is *absolutely necessary* that the patient should be seen, and his pulse examined, before the exhibition of each dose. When this cannot be done, the remedy may be given in the manner pointed out in its use as an anodyne and calmative." (p. 81.)

We give Dr. Fleming's own words, but it is evident that the anodyne method is even a more powerful one than the antiphlogistic, as five minims three times a day will by many be interpreted to be a dose every four hours, and therefore the necessity is as great in this as in the other, of examining the pulse before the exhibition of a second dose. But we regard this dose as too high.

The high price of the alkaloid aconitina leads to a preparation of inferior quality or totally inert, being substituted in the shops. The tincture is an excellent substitute. "One or more drachms of it are to be rubbed over the affected part three times daily, the friction being continued at each time for a quarter of an hour, or until the topical effects of the drug are fully developed."

Several cases are given in an appendix, as well as experiments on animals.

In closing our analysis, we are merely doing justice to Dr. Fleming in expressing our high opinion of the merits of his essay. It is simple, clear, carefully considered, and judicious, and this is no slight praise to a young author writing on his favorite remedy, a dangerous theme even for a less sanguine time of life. Were we not thus satisfied, we should not have given further currency to the high recommendations of a remedy of such dangerous power: knowing how much more easy it is to go wrong than right, and that it is certain that it must do harm if administered without due consideration of the whole of the circumstances of the individual case, for which it is prescribed. We would therefore repeat our cautions, that it should be employed in no cases where there is great depression, or constitutional feebleness of the vital powers; that in nervous delicate women, especially of the upper classes who are great sufferers from neuralgia, it should not be thought of, unless externally where all simpler medicines had failed; but that when there is good vital power with increased vascular action attended with either neuralgic pains or the inflammation of the larger joints, it may be cautiously used, and where the effects of each dose cannot be watched, careful directions should be given that the medicine should not be long persevered in, and should be discontinued as soon as the patient complains of any feeling of sinking, or great cold, or depression. But we ourselves should be sorry to prescribe the remedy internally in any case which was not under our daily inspection.

Since the above notice was written, we have been much concerned to find that a gifted and estimable member of our own profession has died, as it would appear from taking aconite on the authority of this writer. Dr. Male of Birmingham, æt. 65, had complained of pains in the back and loins for two months; and not experiencing relief from ordinary means, he took tincture of aconite for four days, beginning with five-drop doses either twice or three times a day, and increasing the dose to six, eight, and ten drops, so that on the evening of the fourth day he had taken a dose of ten drops. On the morning of the fifth day he was seen by Mr. Russel. His extremities were cold, surface cold and clammy, pulse 130, feeble, cramps and pains in the legs, and spasmodic pains in the stomach; he expressed his conviction that he should die, and that the medicine was too powerful for him, but he also expressed his most earnest desire that he might recover, as his life was of the utmost importance to his children at this time. He gradually sank, and died on the morning of the seventh day without paralysis, and perfectly composed. The body was healthy; and the only morbid appearance was unusual fluidity of the blood. The verdict of the jury was "accidental death from an overdose of aconite taken medicinally by the deceased."

Mr. Russel was doubtful whether Dr. Male told him he had taken the aconite twice or three times a day. Had he taken it twice a day he would have taken 58 drops in four days, if three times a day 87 drops. From the result the latter is more probable, and also as Dr. Fleming recommends it to be taken three times a day. That the aconite killed him is most probable. The symptoms are precisely those described by Dr. Fleming—depression of

all the vital powers; prostration, cold skin and extremities, rapid pulse, clear intellect, conviction of impending death. There were also some diarrhea, and spasmodic pains in the stomach from that acridity which produces heat and tingling in the mouth, but the fatal symptoms could in no way have depended on this comparatively slight local action. As there was no paralysis, loss of mental power, nor symptoms of asphyxia, death could neither be attributed to the effect of the poison on the brain and spinal cord, nor on the lungs. That aconite does not kill by immediately paralysing the heart is evident from experiments on animals, where the heart beats after death. May not, therefore, the general prostration of all the vital powers be explained by the poison destroying the life of the blood itself with which it must be mixed? And this view harmonizes with the fact that the only change discovered after death was increased fluidity of the blood.

"The treatment consisted in mild aperients with camphor and ammonia." To give aperients at all when there was such prostration, is very strange practice. The free use of very powerful stimulants, such as brandy, champagne, wine, aided by electricity and friction, seems the rational means. They may have been employed, though no mention is made of them; and as two days elapsed between the last dose and death, there was plenty of time. The case unfortunately is a most instructive one. The responsibility which we feel in promulgating a favorable view of such a remedy is greatly increased by it. It is still more evident that aconite should never be given in slight cases or without the clearest indications that a powerful antiphlogistic is required, and that the age of the patient and his constitution warrant the belief in his vital energy. The case may be a most useful warning, and speak more powerfully than any reasoning as to the absolute necessity of caution in the use of aconite.

We are glad to be able to add from the pages of a contemporary, a brief notice of Dr. Male's life and character. He was a man deserving all consideration from his brethren.

"Dr. Male was the son of the late James Male, esq., of Belle Vue, near Birmingham. He received his preliminary education at Eton College, where he acquired some distinction in the classics and belles lettres. His medical studies were for the most part prosecuted in Edinburgh, from the university of which place he obtained his degree. He settled in Birmingham, as a physician, in 1802, and was shortly appointed one of the medical officers of the General Dispensary, which institution he continued to serve with much fidelity and usefulness for seven years. In 1805, the resignation of Dr. Carmichael caused a vacancy in the General Hospital, and Dr. Male was fortunate enough to become his successor. To this institution the subject of our biography was an honour and an ornament for thirty-six years; it is not too much to say of him, that for that lengthened period he was unvaryingly distinguished for the kindest sympathy and the profoundest skill, towards the several objects of his professional care. To his private patients, which were both numerous and of the highest respectability, he was endeared not only by the success of his treatment, but by the soundness and integrity of his principles. He was a man of most undeviating honour and rectitude, faithful to his friends, and of unyielding firmness in whatever he believed to involve matters of truth or of duty. He was a sincere upholder of professional dignity, courtesy, candour, and kindness. Perhaps the best proof of the estimation in which he was held by the profession of Birmingham, will be found in a remark made to the writer of this article by a fellow-physician, who is too just to pay an unmerited compliment, and too generous to withhold a deserved one—the

observation came with peculiar emphasis, for it was offered over a grave—"Dr. Male, sir, was a man to whom I invariably took my hat off." That sentence, coming from a source whose uprightness none can better appreciate than ourselves, will convey a far higher tribute to the memory of the lamented individual, than any praise which it is in our power to offer.

"As an author, Dr. Male enjoyed a distinguished reputation. He was the father of English medical jurisprudence. The first work upon this subject in our language, was Dr. Samuel Farr's '*Elements of Medical Jurisprudence*,' published in 1788. This, however, was little more than an abridgment of the '*Elementa*' of Fazellius, and although medico-legal questions were subsequently discussed in the writings of Mead, Munro, Denman, Percival, and John Hunter, and Dr. William Hunter published an able essay '*On the Uncertainty of the Signs of Murder in the case of Bastard Children*,' yet the first *original* work in English on medical jurisprudence, was Dr. Male's '*Epitome of Juridical or Forensic Medicine*.' This appeared in 1816, was dedicated to Sir Samuel Romilly, and consisted of 200 pages. It displayed an unusual amount of shrewd observation, clear reasoning, and comprehensive research. It shortly passed through a second edition, and was reprinted by Dr. Cooper in America, in 1819, along with the treatises of Farr and Haslam. Although various impediments, professional and other, prevented Dr. Male from bringing it in later years up to later science, his work is still quoted as being upon certain subjects amongst the most exact and accurate of any extant.

"It is singular that Birmingham should be able to boast, in the person of the late Dr. Male, of the first original writer on English medical jurisprudence, and in the person of the late Dr. Darwall, of the most ample annotator of the greatest work upon the subject in our language and out of our country—viz., the stupendous work of Beck in America; and the coincidence is not more remarkable than mournful, that the distinguished individual whose memoir we now close, should have been one of our first writers on indigenous poisons, and finally a victim of the deadliest of them." (*Medical Times*, August 9, 1845.)

#### ART. XVII.

*General Reports of the Royal Hospitals of Bridewell and Bethlem, for the Years ending 31st December 1843 and 1844.* Printed for the use of the Governors.—London, 1844-5. 8vo, pp. 82-112.

THE Royal Hospital of Bethlem, commonly called "Bedlam" is a government institution containing three classes of patients.

Poor lunatics are admitted who have not been insane more than twelve months, and they are allowed to remain twelve months under cure; some of these remain as incurables; and the third class consists of criminal lunatics. In 1844 there were 182 curable cases, 86 incurables, and 91 criminal lunatics. The Reports of 1843-4 are now before us: important documents as careful registers of facts, and from the proofs they exhibit of the judicious, watchful, and humane treatment adopted. They breathe throughout the spirit of humanity and good sense, and convey the impression that the committee and staff perform their duties admirably well. We shall be doing a good service in giving a larger circulation to facts showing the improved management of an institution which had become a bye-word. *Bedlam!* a term which has been naturalized from its expressing in one word a whole sentence; and what a sentence! "*A Bedlam*," a hell upon earth, a madhouse, and a loathsome prison combined in one—conjuring up the compound image of murder, madness, and perpetual imprisonment amidst

disorder, chains, dark dungeons, and filthy straw. "*Fit for Bedlam*," qualified for the lowest conceivable depths of degradation and imbecile misery: a prison—where a quarter of a century after Pinel had shown that it was as safe as it was humane to release even the most savage maniacs from chains and dungeons, the parliamentary commissioners discovered that the old horrors were still in fashion; that not one ray of light had broken into the obscure intellects or warmed the cold hearts of the Bedlam Committee; where dozens of human beings whose spirit was not so entirely broken that they could resent no longer cruelty and wrong, were chained night and day by hands and feet to their pallets, naked, except a rug or foul blanket, whilst those who had been reduced by ill-treatment and disease to harmless imbecility were consigned to styes of filthy straw. One "Norris" is mentioned—shrewd and intelligent, but at times furious. Mr. Haslam, the apothecary, recommended a strong cell. The committee decided otherwise. They fixed an upright iron post in the centre of a cell, an iron collar was riveted round Norris's neck, and made to slip up and down this pillar, whilst round his waist was fastened another hoop to which his arms were closely pinioned. He sat on a trough to which his legs were chained. It took twelve years of this misery to wear him out, and visitors who were admitted to stare at him, saw him reading books of biography and history, and found that he could talk sensibly on the topics of the day.

But another quarter of a century has passed, and we have these Reports, out of which neither the most determined grumbler nor the sickliest sentimental admirer of the middle ages could extract one proof of our degeneracy. Quite otherwise. Admitting fully that we are as culpable as a nation as each one is individually, too often knowing the right and following the wrong, yet such evidence as we have now before us is a cheerful proof of the real progress society has made in the path of humanity, and of the indisputable claims which our own art has to the gratitude of mankind. But let us pass on to the Reports themselves.

During 1843, 284 cases were admitted. The number of cures were greater than the preceding year. In 1843, 159 were cured, or 56 per cent. on the admissions, whilst a similar calculation for 1842 shows only 51·31 per cent. In 1844, however, the number of cures again fell short: 286 cases were admitted, and only 128 were discharged cured. A careful examination of the tables explains the reasons of this, and shows that very little faith can be placed in the results of statistical tables unless all the circumstances are taken into consideration. The unfavorable returns of last year lead the reporter into such a minute examination of the circumstances of all the cases as probably would not have been thought necessary, if the results had been favorable. More accurate conclusions, however, are gained from the results of the treatment of many years, and the increased proportion of cures which such tables exhibit is very gratifying. Thus in the middle of the last century the ratio of cures was 33·20 per cent. annually, in 1843 it had reached 56 per cent.: whilst the deaths in the former period were annually *one in every four admissions*, and now they are *one in every seventeen*.

From the advantages resulting from employment, a range of workshops were erected in 1843, that the patients might carry on simple handicraft trades, not with a view to profit, (although a considerable expense is saved

even by the patients in whitewashing and painting,) but to withdraw their attention from their own distempered ideas, and to alleviate the monotony of their confinement. The only argument against this plan is the danger which may result from the use of tools. But as it has been found that the patients have been intrusted with hoes and spades in the garden, with carpenter's tools, sledge-hammers and rods of iron at the forge, and "no accident of the most trifling character has occurred," but the patients have been most materially benefited, there were good grounds to infer that the several trades about to be established might be carried on without danger, and with more wide advantage, and it was confidently anticipated that in the course of the spring "an industrious and cheerful colony of artisans would fill these buildings, instead of pacing the galleries in listless idleness and melancholy silence." It is less difficult to employ the women, and for years, the laundry, household work, sewing and knitting have afforded occupation; the present matron has introduced straw-plaiting, bonnet-making, shirt-making, lace-making, and fancy-work, and the large and cheerful apartment recently complete and furnished as a workroom, affords abundant evidence of the industry of the patients. This institution from its peculiar nature renders profitable occupation difficult. One fourth of the patients only are old and incurable cases, and of course these mere chronic patients can alone be employed with any degree of regularity. The curable patients who form one half of the whole number, cannot remain more than twelve months, and do not on an average remain more than five months.

The Report for 1844 confirms these good accounts.

"The improvements introduced in 1843 now work more smoothly, from greater practice and experience, and are now completely incorporated as part of the system on which the hospital is to be for the future conducted. The workshops have been completed. All the ironwork, painting, plumbing, glazing, carpentering, bricklaying, plastering, and mason's work, engineering, and millwork, now required for the ordinary use of the establishment, is performed in these workshops, thus combining economy with these most important remedial agents, so useful in alleviating the maladies of the inmates." [No accidents have occurred.] "The blacksmith's workshop has been doubled in extent; a large and commodious apartment has been set apart for the engineers, and the carpenters' shops are now nearly twice their former size. In each and all of these are to be seen some of the patients; but their quiet and orderly demeanour, and contented and cheerful industry, render it impossible for a stranger, and even difficult for a governor, to distinguish the patient from his attendant. Several of the patients who were unacquainted with any branch of trade, have been instructed in one or other during their residence; and every advantage is taken of inducing those who can work to occupy themselves, if possible, in those trades. One instance of the kind may be here stated, as it shows the effect of gentle persuasion in this respect. A patient, previously an engineering smith, was in a most desponding state, and it was with great difficulty that he could be prevailed upon to take any exercise. The steward, having at last induced him to visit the engineers' shop, fixed a piece of iron in a vice, placed a file in the patient's hand, and holding his arm, began to use it as if at work. The well-known sound and motion roused the attention of the patient, and the next day he voluntarily began to work, and has continued a constant and industrious workman, and before four months had elapsed he had made and finished a cross head-bar for a steam-engine, with all its necessary joints and sockets ready for immediate use; while the improvement in this patient's bodily health was as great as in his mental disorder; and, like almost all the other patients employed, he expresses his gratitude for it and his sense of its value.

Numerous other instances of a similar nature might be quoted, but to do so is at present unnecessary. All persons conversant with insanity now admit the advantages arising from active bodily occupation in the treatment of the insane; and if any lingering doubts should still remain in the minds of any governor respecting the prudence of the system now pursued at Bethlem Hospital, they must be removed by the knowledge of the important fact, that no accident or misadventure has occurred during the past year in connexion with labour or from the use of the instruments employed. It cannot be denied that the system is carried out with much boldness and decision; and the greatest credit is due to Mr. Nicholls for the vigilant and constant supervision which he maintains over this most essential part of the Institution, as well as to the artisan-attendants, who display the greatest caution and kindness towards those placed under their care and instruction. The absence of accident, and the diminution of restraint, not only justify the system adopted, but advocate its extension wherever practicable.

"The plan is now in complete operation, and the anticipations formed in the last Report of its beneficial effects have been fully realized, not only in promoting the comfort of the patients, but in many instances it has been a main cause of cure, and in all it has tended to alleviate the irksomeness of their confinement, to interest the moody, and divert the energy of the excitable into a course of cheerful industry and congenial occupation." (pp. 4-5.)

Their *amusements* are attended to. There is a library of useful and entertaining books, which is efficiently superintended by an incurable librarian. Chess, draughts, cards, and backgammon have long been allowed with very beneficial effects, and are carried on in a well-furnished and comfortable room appropriated to reading, writing, drawing and other amusements. The committee suggest that a set of maps would be acceptable, as there are many foreigners, and most of the patients come from distant parts of the kingdom.

"In addition to the many obvious advantages arising from a well-considered system of amusements, there is one of great importance, which ought not to be overlooked. The order and content which it produces removes the motive which sometimes was mistaken for the necessity of sending the patients to bed at an early hour. Attendants, however well disposed, if wearied out with vain attempts to soothe and tranquillise patients who, solely for want of occupation, became a cause of perpetual annoyance and vigilance, could hardly be blamed if they formerly looked forward to the hour of removing their troublesome charges to their sleeping-rooms as a welcome release. If this feeling ever existed, it does so no longer. The attendants and nurses join in the games and recreations; thus maintaining the best possible feeling between them and the patients, who now invariably yield to their requests with willingness and alacrity." (p. 47.)

To the women's rooms has been added a piano, which often leads to a dance which is always conducted with gaiety and decorum. By a vote of the general court, permission was given to procure a billiard table which has been done.

"The use of it is granted sparingly and with caution. It is employed chiefly as a means of exercise when the patients are unable to leave the galleries from the state of the weather, or cannot otherwise be induced to exert or amuse themselves. This and the bagatelle boards have fully realized the favorable expectations of the governors."

An instructive case is given. A patient was brought to the hospital so excited that when released from his strait-waistcoat he knocked down three strong men. The next day, although still greatly excited, he was taken into the amusement-room, he appeared astonished at seeing a number of persons reading, playing at cards, draughts, and bagatelle; he became calm,

joined in the amusements, remained quite tractable, and was discharged cured.

Such an anecdote is highly instructive. The excitement and violence which seemed to require physical force was at once subdued by the simplest moral means. How apt are we to forget that we have human beings to deal with, not mere pieces of mechanism moved by steam, or galvanism, or gunpowder! Although the complete non-restraint system has not been adopted yet, the governors are not to be considered as opposed to a system, "which though it works well in asylums in which chronic cases and idiots form a large proportion of the inmates, has not been adopted to the same extent in an hospital which receives none but recent cases." Every instance of restraint, however short, is registered, and the diminution, arising mainly from the increased means of employment, during the last five years, has been striking, and attended with the best results. The following is the weekly average of patients under restraint:

1839—11½	1842—3
1840—13½	1843—34.
1841—9	

One of the greatest advantages (says the Report) arising from dispensing with restraint, as far as practicable, is the change which it invariably produces in the intercourse between the patients and attendants. They acquire the confidence of the patients, and become the directors of their occupation and the companions of their amusements, instead of exhibiting themselves only in the repulsive character of gaolers.

Each patient has a tepid bath once a week, and a second change of linen. Tea and sugar have been allowed since March last. This costs the hospital £400 a year, but it is a great addition to the comfort of the patients and relieves their friends who could ill afford to supply them. To avoid hurting the feelings of the patients no distinctive dress is required, and knives and forks properly secured have been substituted for the former bone implements; and crockery for the old wooden platters. The table which shows that increase in the number of those who attend the chapel goes hand in hand with diminution of restraint and kinder treatment, is most instructive. In 1839, 27 per cent. attended; in 1843 nearly 49 per cent.: thus within the last five years the number of patients attending chapel have doubled, and within the last ten years have more than trebled! The number of attendants has been increased, and an annual increase of wages allowed, depending on satisfactory conduct. "Too much care cannot be taken in the selection of attendants, and their wages and comforts should be on a liberal scale. The constant trials of their temper and forbearance require qualities of mind and disposition rather than personal strength."

The following passage is too important to be consigned to a Report read by governors only. It goes to the root of the matter, and shows that in the non-restraint system, employment and amusements are essential, and that if lunatics are encouraged to spend their days in listless indolence, they will, like children, as well as all idlers, quarrel with each other, magnify trifles into great things, and become irritable and peevish, and mischievous. It is not only in nurseries that

"Satan finds some mischief still  
For idle hands to do."



"Perhaps nothing marks the contrast between lunatic asylums, in which due and ample provision is made for the amusement and occupation of the patients, and those in which, for various reasons, the patients are not employed, than the feeling which exists between the patients and the attendants. In the first, the attendants invariably exhibit a kindness and consideration to the patients which can hardly be looked for in the latter, where, unoccupied and irritable, the patients are a source of continual annoyance and trouble to their attendants and to each other. To suppress confusion, and quell violence, the attendants, in the absence of other means, must have recourse to harshness and severity; their presence is regarded with dislike, and a feeling of continual hostility engendered between them and the patients." (Report, 1843, p. 51.)

The obvious consequences of such idleness is, that restraint will be employed. The irritated keeper will put the riotous ones in handcuffs, muffs, and restraint-chairs, and having rendered them incapable of more mischief, will go back to his game of whist and his beer with his fellows. The connexion between want of occupation and mischief, the metropolitan commissioners have overlooked in their view of the non-restraint system, and among the arguments given in favour of it they have entirely omitted, as we have before stated, one of the strongest "that mechanical restraint is an exciting cause of suicidal propensities,"—and which is thus proved. Eighty-one patients or more than 28 per cent. of those admitted were reported as having suicidal tendencies, and thirty-seven of these or 13 per cent. had attempted suicide previous to admission, and yet although only three patients have been on an average under restraint every week, there has been no attempt at suicide during the last year! "No stronger evidence (the Report continues) can be given of the tendency of mechanical restraint to excite suicidal attempts than that supplied from the records of the hospital, from which it appears that during the twenty years, from 1750 to 1770, *when every patient was under restraint*, the suicides were in the proportion of 1 to 202; whereas, during the last twenty years, the proportion has been only 1 in 963." This evidence is invaluable. It gives us the highest satisfaction to be the means of diffusing so conclusive, so unanswerable, so deeply important a fact. A medical proprietor of a licensed house has recently given as one of the reasons for restraints, the responsibility he is under for the lives of his pauper patients. If they kill themselves he loses his character, and as he supposes, he prevents this evil by hand-chains; but such a fact as this must alter his opinion, as it proves that his supposed remedy is the most ready means to produce the propensity he fears.

The Report for 1844 adds still further evidence in favour of the non-restraint system:

"It is deemed expedient," says the Report from Bedlam! "*rather than impracticable*, to adopt the principle of dispensing wholly with restraint under all circumstances; yet every opportunity is taken of confining it within the narrowest possible limits. Personal restraint has been reduced to one-tenth of what it was six years ago; and it is most gratifying to be able to state, that it has been reduced during this year to one half of what it was in 1843. The following returns show the average weekly number of patients in restraint during the last six years:—

1839—11½	1842—3
1840—13½	1843—3½
1841—9	1844—1½." (p. 49.)

—Thirty-six per cent. of those admitted this year were reported as having attempted or as being predisposed to commit suicide, but no suicide has happened in the curable wards this year.

"Every year" adds the Report, "confirms the view that restraint is a highly-exciting cause of suicide; and the fact that no untoward circumstance has occurred in Bethlem, with so large a number of dangerous patients, while mechanical restraint has not been used for two patients a week, is a most striking illustration of the advantage of this system, and the Committee have the authority of the resident officers to state that nothing has occurred to shake their confidence in the advantages of the system which they superintend.

"It deserves consideration, whether it might not be of advantage in the treatment of suicidal patients, to construct a sleeping-room in each gallery, to contain four or six beds, which might easily be effected by throwing two or three sleeping apartments into one. In addition to securing extended accommodation, the companionship thus afforded would be beneficial, as well in assuring the timid patients as in deterring suicidal patients from any attempts against themselves. Suicide is seldom committed in the presence of another, while the tendency may be excited by the loneliness of a separate sleeping apartment. This view is confirmed by the practice in other well-regulated asylums for the insane." (pp. 50-1.)

*Medical pupils.* The governors have with much judgment increased the facilities for making Bethlem a school for the instruction of pupils in the practical knowledge of insanity. Each physician may take pupils at 15 guineas for six months, and 20 guineas for twelve months, the number not limited, but not more than four to accompany him when he makes his visits. In addition to this the governors have authorised the committee to nominate two pupils, one from St. Bartholomew's and one from St. Thomas's Hospital, to attend the physicians' practice at Bethlem; the fees to be paid to the physicians out of the funds of the hospital. As each pupil will remain six months, four pupils will thus attend annually; and they are to be selected "not only as a reward for their assiduity and proficiency in the study of their profession, but also for their general propriety of conduct, to be certified by the medical officers of their hospital, in addition to the recommendation from the president and treasurer on behalf of the governors." Each of these pupils is expected to prepare, and present at the end of his term, an essay on the nature and treatment of insanity, to the governors of Bethlem Hospital; a condition of which we rather doubt the prudence or the useful results.

This we have before urged, and the committee allude to our arguments that to France we are indebted for our best works on insanity, for in that country every insane hospital has a class of students attached to it. On other grounds this will be a great boon. The young practitioner of medicine leaves his studies and commences practice without probably having attended one case of lunacy: and to his care falls the treatment of pauper lunatics at the earliest stage, when wrong treatment is often productive of irremediable mischief. His head is full of pathological anatomy, and antiphlogistic theories. The symptoms of determination of blood to the head which are well marked, are supposed to require the same treatment as active inflammation. The patient is roughly purged "to clear him out," not with a view to improve his secretions; the lancet is thrust into his arm, and he is handcuffed in a strait-waistcoat with brute violence,—when the application of cold to the head would probably have been sufficient, in

a class of patients generally much below par, to have checked or restrained the determination of blood, whilst attention to the improvement of the secretions by aperients and alteratives, and a nutritious unstimulating diet with the judicious use of morphia (in some cases), and quiet, would have been the right practice. And what does wrong practice in this early stage end in? Bleeding the exhausted body of a half-starved pauper, and irritating by coercion and violence his exquisitely sensitive brain, are precisely the means best adapted to render him one of that large class termed incurables, with which our county asylums and workhouses are yearly more incumbered. Sounder views will best be promulgated by actual experience, and although but a few pupils can benefit by Bethlem yet every instructed man is a light by which many are illuminated.

The following case given in the Report for 1844 is a specimen of what is we fear very common :

"The first case alluded to was that of a male patient brought for admission in a very violent and excited state, having, in addition to a strait-waistcoat, his arms bound with cords, his wrists secured by a belt, and his legs confined with strong webbing. In extenuation of such severe measures, his relative, who accompanied him, assured the steward that this restraint was absolutely necessary, 'as he was very difficult to manage, and that it had even required as many as six men to place him under coercion.' The first thing done on admission, was to release the patient from all restraint, and although, as might be expected, he remained for some days in a highly excited state, so as to require the constant watching of one, and sometimes two attendants, no personal coercion was afterwards used during the whole time he remained under treatment. In a few days the symptoms of an inflammatory affection of the chest appeared, from the effects of which, combined with great cerebral excitement, he died, in a fortnight after admission. A post-mortem examination of the body proved that the breast-bone and one rib were fractured; the interior of the chest was also found much affected in consequence of the irritation which the broken bones produced on the lining membrane, and it can hardly be doubted that these severe injuries occurred in the struggles which took place when so much restraint was imposed." (pp. 39-40.)

The first Report refers with gratification to the increased proportion of a class above that of paupers which have been admitted during 1843, and the Report for 1844 dwells on the same topic.

"The table indicating the occupations of the patient will be read with some interest. Amongst the males are included artists, chemists, clerks, clergymen, military officers, students, and schoolmasters; and in the list of females will be found several dress-makers, embroiderers, four gentlewomen, lodging-house keepers, officers' widows, and the wives and daughters of many respectable tradesmen. These are persons with peculiar claims to our sympathy; the rich in their afflictions can command all the aids and comforts which wealth can purchase; the pauper lunatic finds within the walls of a county asylum that care and sympathy to which he may long have been a stranger; but when this fearful calamity falls upon one dependent on his own exertions to maintain a respectable position in society, the consequences are, indeed, distressing; his scanty funds are rapidly absorbed, his sources of income necessarily fail; and his family, after all their willing, but fruitless sacrifices, are borne down to poverty by the overwhelming calamity which has prostrated their protector. Until, therefore, some asylum is instituted, in which this class of patients, so deserving of the generous sympathy of the public, can be received, the liberal policy of the governors who have admitted such patients as those enumerated, and provided them with accommodation and general treatment suitable to their feelings and former position, cannot be sufficiently applauded. The library and workrooms, with the personal comforts arising from the stated use of the tepid bath; the substitution of crockery-ware

at meals; the more frequent changes of body linen; and the improved appearance of the bedding materials,—are not only fully appreciated by the patients, but have removed many causes of irritation which operated injuriously upon them, by making too strong a contrast with their habits of life before admission. Every opportunity is taken of assimilating the treatment, as far as practicable, to the previous habits of the patients, the propriety of which is most obvious." (59-60.)

That more real charity is displayed in giving the temporary succour of the hospital to this class, unprovided for in our county asylums or workhouses, all must agree with the committee. And it is with the liveliest satisfaction that we are now enabled to announce that the claims and necessities of this large class, are about to be met by the establishment of an institution for their especial benefit. The subject of such an asylum had engaged the consideration of Dr. Conolly and several of his friends, for the last two years; but it is only recently that steps have been taken for its actual institution. At a public meeting held at the Freemasons' Hall, on the 10th July, composed of many benevolent members of the medical profession and of other philanthropic persons, and presided over by that great redresser of wrong in all its forms, Lord Ashley, the "Asylum for the Insane of the Middle Classes of Society," took its name among the charities which do honour to this country, and will, we trust, ere long, have as its local habitation one, not the least conspicuous, of the architectural structures that adorn the vicinity of the metropolis. In this institution, for the moderate sum of 25 or 30 shillings per head per week, all the advantages and resources enjoyed in the best institutions for the treatment of this disease, will be ensured for a class above those which would be admitted into Bethlem, but still not wealthy enough to remunerate the proprietors of smaller asylums. "Persons of good family and of small income, officers on half-pay without fortune, clerks in the public service, or in offices of various descriptions, with salaries dependent on their continued exertions, tradesmen of small property, or retired with a scanty independence, clergymen with small incomes, men of the other learned professions who have no other means of support, tutors, governesses, and many others whose position does not require to be specified, but who in ordinary circumstances enjoy all the comforts of respectable life, are at once involved in pecuniary embarrassment, and often eventually reduced to absolute poverty and want, by the occurrence of insanity in themselves, or in the person of a child, a wife, a parent, or some dependent relative."\* It is proposed to raise, by donations, the sum of £30,000, which is considered, after the most careful calculations, to be sufficient to purchase 25 acres of freehold land near London, and to erect an asylum capable of accommodating from 250 to 300 patients. This house will, of course, by its construction and organization, be capable of supplying the inmates with all those occupations and amusements, those means of moral, intellectual and physical improvement which tend to the recovery of those who are curable, and to the solace, comfort, and amendment of all. These objects could be provided at a moderate expense in a large asylum only, and it is fortunate that the size of an asylum rather facilitates than obstructs the attainment of these advantages, by rendering classification more easy and thereby securing tranquillity to some, and to the majority that cheerfulness

\* Prospectus of the Asylum for the Insane of the Middle Classes.

which results from a variety of objects which excite attention, and interest, and stimulate to exertion and imitation, the want of which renders smaller establishments oppressive by their dullness, and monotony. It is further proposed, as an integral part of the plan, that a charitable fund shall be raised by donations, subscriptions, and bequests, the interest of which shall be applied for the benefit of the more distressed among those for whose relief the asylum is destined, a certain number of whom are to be elected from time to time from those patients who have been a year in the asylum, and placed on the list of patients received for a lower payment, say for fifteen or ten shillings per week, or even without any payment whatever. By this means timely support will be afforded to families who have made great exertions to furnish the annual payments for a time, but are unable to continue them, and to cases where the occurrence of insanity has wholly deprived the sufferers and their families of the means of support, and where the assistance of friends can only be relied on for a limited period. Those who are most conversant with the wants of society are, it is believed, unanimously of opinion that such an institution as this is urgently needed, and that it would be of important service in relieving the misery of those on whom this worst disease falls heaviest; those who have been reared in comfort and with a share of the refinements of life, but who by the same blow which renders these comforts necessary, are deprived of the means of procuring them.

But to return to these Reports of Bethlem. Fourteen new wards are erecting for the exclusive use of convalescents. The best authorities in insanity, (Esquirol, Pasquier, and others,) insist on the necessity of the complete separation of the convalescent from those at a stage less advanced, and to these wards no patients are to be admitted who are not reported cured, for the purpose of preparing them gradually for the entire control over their actions when finally discharged. The records of the hospital prove that many readmissions have arisen from the sudden change of scene which patients have experienced from want of such a probationary period.

The Report of last year confirms the opinion that the non-restraint system keeps up confidence and good feeling between the attendants and patients. The difficulty of obtaining good attendants, which is the greatest difficulty to be overcome in lunatic asylums, has been partly overcome in Bethlem. Attached to the hospital and forming part of it is the house of occupations to which neglected and destitute children are sent, as some of the best conducted have been trained during the last year to act as attendants and nurses for the insane patients, in addition to learning trades and the duties of domestic servants.

"No less than twelve boys are constantly employed with the convalescent patients in the workshops of the hospital, under the tradesmen-assistants, with great advantage to both parties. The convalescent associates with sane persons, no slight aid to ultimate recovery, while the boys familiarized with the aspect of lunacy, learn forbearance, kindness, and a respect for the feelings of others, which operate beneficially upon their own feelings and conduct, while their experience, which few can obtain, may be of substantial value to them in after life."

This experiment of employing boys as attendants, which has only been tried one year, is of great interest. Orphan and destitute children form so numerous a class in our union workhouses, that much mutual benefit might arise from their employment in this way in county asylums. The

union workhouses would be relieved and the asylum benefited, whilst the public expense would not be increased.

These Reports furnish strong evidence in favour of county asylums, as they show how curable recent insanity is, and how greatly its evils may be relieved by such classification, employments, and amusements, as alone can be methodically pursued in a large institution. Every day we are more convinced of the necessity for county asylums throughout the kingdom, to give the poor the best chance of cure, so as to reduce, or at least not to increase that class who are condemned to perpetual imprisonment and uselessness, a burden to themselves and to the public; and Lord Ashley's new Lunatic Act is one of those large and liberal provisions which, we trust, will prove as beneficial to the insane poor as it is worthy of the benevolence of its author, and the beneficence of this great country.

The criminal department of Bethlem contains ninety-two inmates, seventy-three men and nineteen women. This is virtually a government prison, the duties of the governors being confined to the safe custody of the inmates and the superintendence of the internal economy. The patients "are treated in the same careful and gentle spirit which pervades the other departments."

In closing our extracts it would be injustice not to mention the names of Mrs. Hunter, the matron; and of Mr. Nicholls, the steward, who superintend the male and female departments. The well-conceived plans and skill with which the former carries them into effect, and the readiness in resources, the general ability and masterly skill of the latter are spoken of in high terms of well-deserved eulogy by the committee. The author of this excellent Report conceals his name, and though we believe him to be a much-respected member of our own profession, we do not think proper to strip him of the incognito he has chosen to assume. Of this, however, he may be assured, that his labours in ameliorating the condition of the inmates of Bethlem have the highest reward—the blessings of those who have benefited by them. Presidents and committees, according to our experience, often get public credit for the labour of one or two who wish no higher reward than the mere gratification of doing good—the living powers of the establishment, working noiselessly and unseen.

"Sagt! was füllet das Zimmer mit Wohlgerüchen? Reseda,  
Farblos, ohne Gestalt, stilles bescheidenes Kraut." (Goethe.)

Glad were we to hear lately from one of our sight-seeing friends that he had just been over "Bedlam," but that there was really nothing to see: he should not have known that it had been a madhouse. The attendant, too, he said, (most rightly and judiciously we thought) hurried the whole party through the rooms as if it were a duty he did not like, and wished to get over quickly.

"Heureux le peuple dont l'histoire ennuie;" and happy Bedlam when it is no "*spectacle*," when there is nothing excitingly shocking to tell about. We turned to the description of a keeper sixty years since, who, when the ladies whom he was conducting through Bedlam, were shocked with the clinking of the chains, the wildness of the cries and imprecations, and begged to return; "he seemed surprised at their uneasiness, and was with difficulty prevailed on to leave that part of the house without showing

them some others; who, as he expressed it, in the phrase of those that keep wild beasts for show, were much better worth seeing than any they had passed, being ten times more fierce and unmanageable."

But why is Bethlem a London sight at all? Surely there are sights enough—Zoological Gardens, Fancy Fairs, General Tom Thumb, Mesmeric Mountebanks, Exeter Hall, and others innumerable. There is every excuse too now for shutting it up. The gentle public will not even be deprived of one of its excitements, its pleasing horrors; for humanity has spoiled its piquancy, and made a visit which afforded reminiscences for life, flat, stale, and unprofitable. Such tidings as these Reports bring, make us rejoice that a name recalling the best associations of which our highest nature is capable of delighting in, but which had been so corrupted and disfigured as to bear so faint a resemblance to its original, is once more restored to our everyday tongue: "BEDLAM" is no more; and for the future "BETHLEM," whilst it expresses the original idea of the hospital, will convey the right impression of its actual condition.

#### ART. XVIII.

1. *De Syphilide Kali hydriodico tractata, Dissertatio quam pro licentia summos in medicina honores rite capessendi publico eruditorum examini subjicit auctor MARTINUS HASSING.*—Havnia, 1845.

*Dissertation on the Treatment of Syphilis by the Iodide of Potassium.* By MARTIN HASSING.—Copenhagen, 1845. 8vo, pp. 92.

2. *Observations pratiques sur le traitement des Maladies Syphilitiques par l'Iodine de Potassium.* Par le Docteur L. P. A. GAUTHIER.—Paris et Lyon, 1845.

*Practical Observations on the Treatment of Syphilitic Diseases by the Iodide of Potassium.* By Dr. GAUTHIER.—Paris and Lyons, 1845. 8vo, pp. 100.

AFTER some general observations on the modern improved methods of treating syphilis, the authors of both the works before us commence by giving a historical sketch of the introduction of the iodide into practice. The Frenchman, as usual, claims the honour for his own countrymen, Richond Desbrus, and M. Eusèbe de Salle, who used it in 1823, and M. Lallemand in 1826. These gentlemen, however, employed iodine internally, and frictions of the iodide for buboes and chronic enlargements of the testicles. The German states that Bichler, in 1822, used the iodide locally in a case of indurated bubo, thus preceding Richond. Both authors, however, agree in ascribing the credit of introducing the iodide as an *internal* remedy in *secondary* syphilis to Dr. Wallace of Dublin, and Dr. Williams of St. Thomas's hospital. Dr. Williams read his well-known paper at the College of Physicians in 1834. Ricord did not take up the inquiry until 1839, when he recommended the iodide in the tertiary cases, and in 1840, in cases of ulceration of the fauces. Dr. Gauthier, who is physician of one of the hospitals in Lyons, commenced its use in 1841. Ebers of Breslau, in 1836, was one of its earliest supporters in Germany, and Dr. Kluge has since used it extensively in the Hospital of Charity at Berlin. We have given these dates, as it is of some interest to trace the history of a medicine which, almost unknown ten years since, is now

generally used throughout England, France, and Germany, and is daily becoming more employed as it is better known and appreciated. Dr. Hassing gives a long statement of the authors of each country in succession, and of the various circumstances in which they found the remedy useful, and proceeds to give an account of the views of Wallace and Ricord, quoting both freely. He then examines the value of the medicine statistically, basing his observations upon 250 cases observed in the medical section at Copenhagen between July 1838, and August 1839. All the patients were treated alike on low diet, and the remedy was given to all in the same form. Two drachms of the iodide were dissolved in eight ounces of water, and half an ounce of this solution ( $7\frac{1}{2}$  grains,) given three times a day. All the patients were continued for some time after cure under observation—almost all belonged to the lower class of society—and in the rare cases in which relapse occurred, the same mode of treatment was repeated.

Of the 250 patients, 68 were men, 181 women, and 1 infant, the great majority between 20 and 40 years of age. To show the kind of life the patients followed, Dr. Hassing states that 69 were maid-servants, 55 prostitutes, 32 married and 17 single women, 9 widows; 32 mechanics, 21 workmen, 6 seamen, and 9 of other professions. Of these 145 were perfectly cured, 49 imperfectly, some traces of disease remaining, and in 56 no effect was produced. The mean duration of treatment was 38 days. The shortest period at which relapse occurred was about six weeks, the longest 4 years and 9 months, the mean about 11 months.

The iodide in all the cases of primary affections in which it was employed was without effect. It exercised very little power in cases of bubo. In 20 cases of flat condylomata, 8 of which were on the anus, 10 on the genitals, and two in both situations, 7 were cured, 4 benefited, and in 9 the iodide produced no effect. The author, however, ascribes much benefit to rest and cleanliness, and concludes that the medicine does not exercise much power over this affection, whether primary or consecutive. In 49 cases of maculæ, squamæ, and papulæ of the skin, 12 being men and 37 women, 26 were cured, 9 benefited, and in 14 no effect appeared. The mean duration of their treatment was 48 days, and the author concludes that in this series of affections the iodide is a less efficacious remedy than mercury, but that the two may be skilfully combined with advantage. Of 47 patients in whom the iodide was used in cases of superficial ulceration of the fauces and mouth, 24 were cured, 8 benefited, and in 15 no good effect followed, and the author believes that mercury is of far greater value in these cases. In 27 cases of pustules of the skin, the cure was complete in 19, incomplete in 4, and in 4 the remedy was taken without effect,—these being fair grounds for inferring that it is a valuable medicine in cases of syphilitic ecthyma. In 21 cases of tubercle of the skin, 15 were cured, in 3 the cure was incomplete, in 3 the treatment was unsuccessful. Relapse was rare, and the author believes that the iodide is equally efficacious in tubercles as in pustules of the skin. Of 53 cases of rupia, 43 were completely cured, 7 incompletely, and in 3 only the remedy was useless. Thus the remedy is especially applicable in cases of rupia, and relapses are rare. In deep ulcers of the fauces the iodide was employed in 49 patients: 42 were cured, 3 benefited, 4 were not benefited, but



were ultimately cured by the bichloride of mercury. It would appear that in these cases the iodide is equally beneficial whether mercury has or has not been previously employed. Relapses are rare, and when they occur, are in the first year. The iodide was employed in 3 cases of subcutaneous tubercle, in 2 successfully. Of 51 cases of tumours of the bones and periosteum, 8 were in men, 43 in women. In 6 only complete cure followed the use of the iodide, that is complete disappearance of the tumour and pain, in 22 the tumours were diminished in various degrees, in 23 they remained unaffected. The author has not made up his mind as to the value of the iodide in this class of cases, but believes that it is an efficacious remedy, *when compared with others*.

In pains of the bones (*Dolores osteocopi*), in 73 patients, 58 again being females, 15 males, the pains altogether disappeared in 65 cases, in 3 diminished, and in 5 the iodide was given without effect. It would appear that the iodide is somewhat less efficacious in these cases when mercury has been previously taken, the recovery being less rapid. Relapses are rare, and generally occur within the first year, when they are observed. In no other symptom of syphilis, is the iodide so efficacious, and its effects so certain, as in these cases of pains in the osseous system, whether they occur by night or day, or have troubled the patient for years, or only for a few days. In 17 cases of caries and necrosis, 4 in men, 13 in women, the cure was complete in 6, incomplete in 4, and in 7 the medicine was useless; of these 7, 3 were afterwards cured by mercury. The author does not speak from personal experience of the efficacy of the iodide in cases of syphilitic cachexia—that state of emaciation and general disease of the whole organism we frequently observe without any prominent local symptoms, with languor, hectic, depression of spirits, and rapid decay of both mind and body, in which the iodide has been found most efficacious in this country.

We give some of the author's tables, as they are really of considerable value in the history of syphilis, and also may serve as a guide for the construction of somewhat similar accounts of various modes of treating other diseases.

The first table shows the comparative value of the iodide in a variety of cases.

	No. of Cases.	Perfect cures.	Per centage of perfect cures.	Mean duration of disease.
Pains in the bones . . .	73	65	89.041	10-114 days.
Deep ulcers of the fauces . . .	49	42	85.714	27.333 "
Rupia . . .	53	43	81.132	39.23 "
Tubercle of the skin . . .	21	15	71.429	44.6 "
Ecthymatous pustules of the skin . . .	27	19	70.37	50.0 "
Macule, squame, and papule of the skin . . .	49	26	53.061	57.731 "
Superficial affections of the fauces . . .	47	24	51.064	40.583 "
Caries and necrosis . . .	17	6	35.294	44.5 "
Tumours of bones and periosteum . . .	51	6	11.765	36.167 "

The second table shows the comparative results of the treatment by the iodide when mercury had and had not been previously given.

	No. of Cases.	Perfectly cured.		Imperfectly cured.		Treated without effect.	
		With Mercury.	Without Mercury.	With Mercury.	Without Mercury.	With Mercury.	Without Mercury.
Maculae, &c.	22	11	2	1	2	3	3
Pustules	17	10	5	1	0	0	1
Tubercles	16	8	4	2	0	2	0
Affections, superficial, of fauces, &c.	34	13	5	2	3	4	7
Rupia	42	23	14	4	0	1	0
Deep ulcer of fauces	48	21	20	2	1	3	1
Tumours of bone, &c.	36	2	2	14	4	8	6
Pains in bones	68	35	17	2	0	3	1
Caries and Necrosis	14	2	1	4	0	5	2

The third table shows the results when the iodide was given alone, and when combined with the mercurial treatment.

	No. of Cases.	Perfectly cured.		Imperfectly cured.		Treated without effect.	
		With Mercury.	Without Mercury.	With Mercury.	Without Mercury.	With Mercury.	Without Mercury.
Maculae, &c.	44	7	17	3	6	7	4
Pustules of skin	27	4	15	0	4	2	2
Tubercles of skin	21	2	13	1	2	0	3
Superficial affections of fauces	46	3	21	2	6	4	10
Rupia	51	6	35	2	5	1	2

Another table follows on the number of relapses in each class of cases, but these we have already given in general terms, and we believe have presented our readers with all the important matter contained in this unpretending little essay. The author is evidently a careful inquirer and observer; he has recorded the result of his observations with much modesty and judgment, and thus written a work which must take a certain rank in the history of syphilis, and of the numerical system of medicine.

The work of Dr. Gauthier is a far less valuable and philosophical one, although it contains a great number of very interesting cases illustrating the efficacy of the treatment. He gives somewhat smaller doses of the medicine than Dr. Hassing, and always begins by a small dose and gradually increases it. The only general observation, however, which he has made which may be considered at all novel is that he has employed the iodide advantageously *sometimes*, he does not say how often, in the treatment of iritis; and he says that it has appeared to him to be particularly advantageous when the iritis has supervened, as is not unfrequently the case, during a course of mercurial treatment. He speaks of two cases in which, combined with bleeding and purgatives, good effects followed its administration, and refers to three similar ones, but allows that further observations are necessary before its value can be determined. As far as our experience goes, we may state that of all forms of secondary or tertiary syphilis, syphilitic iritis is the only one which has not been benefited by the iodide, and as calomel has such a marked effect over this form of iritis, especially when combined with albuminous effusion, we confess we should

scarcely like to experiment upon the sight of a patient by a method of treatment which has the sole support of Dr. Gauthier's cases.

We have for upwards of four years been in the habit of prescribing the iodide very extensively in cases of secondary and tertiary forms of syphilis, and may give the result of our experience in a very few words. The best mode of administering it, we have found to be that recommended by Dr. Williams, eight grains three times a-day in camphor mixture. In some affections of the skin accompanied by much itching, also in certain cases of painful periosteal tumours, it has become more efficacious when given in decoction of sarsaparilla. The healing of the ulcers of *rupia*, and of the deep ulceration of the fauces are much accelerated by the local use of the ointment of the red oxide of mercury; in the latter cases being applied by a camel-hair brush. With these exceptions the medicine always acts much better if given alone: combination with mercury or any other drug, not only vitiates the experiment as to the value of the remedy, but also, as far as we have observed, retards the cure. We are convinced, from repeated trials, that there is something peculiar in the action of this particular dose, eight grains three times a-day; we have given it to young and old, rich and poor, feeble and weak, with invariable good effect. A smaller dose is seldom very efficacious, and a larger one is apt to produce coryza and headache, and lead to the necessity of discontinuing the medicine.

The fear of producing absorption of the testis or mammae is perfectly groundless. Neither of the writers before us have ever seen it, nor have Ricord or Kluge who have given it very largely in the hospitals of Paris and Vienna. Dr. Gauthier says he has occasionally observed an eruption resembling acne or eczema depending upon the medicine; this we have never met with, nor with any other ill effect in the dose in which we now universally employ it. The coryza produced by a larger dose disappears spontaneously after the discontinuance of the medicine. Even in cases where local symptoms have not been strikingly benefited, the most marked improvement in the general health has resulted—the patients rapidly gaining flesh and strength, and losing the weary haggard look so remarkable in old syphilitic patients. We conclude by recommending our readers to follow our own practice, and give the iodide to every patient they meet with affected with secondary syphilis; in the great majority of cases it alone will effect the cure, and in the remainder will so improve the general health, as to render the patient fit to undergo any other course which the circumstance of his case may require.

It is curious to remark the very large proportion of females affected with affections of the osseous system, as compared with males, in the reports of Dr. Hassing. It would be well to inquire if the same fact has been observed in this country, and if so to what cause it could be attributed.

## ART. XIX.

1. *Monograph of the Class Myriapoda, Order Chilopoda; with Observations upon the General Arrangement of the Articulata.* By GEORGE NEWPORT, Esq. Fellow of the Royal College of Surgeons, President of the Entomological Society, &c. 4to, pp. 38. With a Plate. (*From the Transactions of the Linnæan Society*, vol. XIX, 1844-45.)
2. *On the Structure, Relations, and Development of the Nervous and Circulatory Systems, and on the existence of a complete Circulation of Blood in Vessels, in Myriapoda, and Macrourous Arachnida. First Series.* By GEORGE NEWPORT, Esq. F.R.C.S. &c. &c. 4to, pp. 60. With Five Plates. (*From the Philosophical Transactions*, 1843.)
3. *On the Reproduction of Lost Parts in Myriapoda and Insecta.* By GEORGE NEWPORT, Esq. F.R.C.S. &c. &c. 4to, pp. 12. With a Plate. (*From the Philosophical Transactions*, 1844.)

WE trust that few of our readers are unacquainted with the name and general merits of Mr. Newport, who has been devoting a large amount of time and labour, during a long series of years, to the investigation of the anatomy and physiology of articulated animals of various classes; and this in the midst of difficulties of various kinds, which would speedily have baffled and dispirited a less earnest and persevering inquirer. But it is not earnestness and perseverance alone, that can make a *discoverer*; even in a branch of science on which so little was known, and so much lay open to investigation, as that to which Mr Newport has devoted himself. Great manipulative skill and sharpness of vision are required, for the performance of dissections of such excessive minuteness; and above all a sagacious, penetrating, retentive, intellect, is necessary for the direction of the eyes, and the guidance of the hand; with reflective and generalizing powers to compare, arrange, and combine the facts ascertained; and a fearless love of truth, that shall lead to the ready abandonment of erroneous conceptions, however cherished, when once they are found to be inconsistent with facts. Such qualities, and many more of similar value, Mr. Newport possesses; and we cannot but regret that the limited patronage, which it is the custom of the Government of this country to afford to scientific men, at least when their discoveries have not an immediate *practical* value, has not yet been extended to him. In now presenting our readers with a somewhat detailed account of Mr. Newport's most recent contributions to the anatomy and physiology of a class of animals to which little attention has been hitherto directed, we are influenced mainly by the conviction that the discoveries have a strong claim upon the attention of our readers, from the importance of the principles they contribute to establish in *general* physiology. That portion of his labours relating to the Nervous System, formerly noticed by us (vol. XVII, p. 181, et seq.), affords a pregnant instance of this most important relation of Mr. Newport's investigations to the every-day pursuits of practical men.

We shall commence with a few observations on the general structure, and history of the development, of Articulated animals in general; by which the subsequent details may be rendered clearer to those who have no previous acquaintance with the subject. The general character of the group

is derived from the inclosure of the body in a firm envelope, divided into segments by transverse lines, as is best seen in the centipede. These segments are extremely numerous in the lower forms of the group, such as the tape-worm, and some of the marine annelida; and there seems to be even a considerable indefiniteness about their number; they are comparatively few, however, in the higher classes, and their number is always the same in each species. The longitudinal repetition of similar parts is not confined to the external or tegumentary system; for it is more or less characteristic of all the internal organs, especially in the lowest vermiform animals. Thus in each joint of the tape-worm we have not merely the nutritive, but the generative apparatus repeated on the same plan; and among many of the marine annelida, we find that the external appendages present an exact uniformity throughout, that the nervous system exhibits a corresponding multiplication of distinct but similar centres, and that the circulating and respiratory systems show indications of the same segmental independence. Now, in the development of these animals, we have a most extraordinary proof of this independence. It has long been known that in the tape-worm, the head and a few segments might continue to live, after being detached from all the rest of the body; and that new segments would then be continually added, by a sort of *budding* process, until the number might reach several hundreds; but recent observations, especially those of M. Milne-Edwards, (*Annales des Sciences Naturelles*, Mars 1845,) have shown that this is the *normal* method of development of many marine worms, which come out of the egg with nothing but a sort of head, behind which segment after segment is developed, until the full length is attained; the animal, at an early stage of this process, bearing so strong an analogy to certain of the wheel-animalcules (rotifera,) as to leave no longer any doubt as to the zoological affinities of the latter class. In these instances, then, we have striking examples of the simplest form of development, distinguished by Mr. Newport as that of *growth*, which consists in the mere extension of the original structure by the progressive enlargement of the old parts, or the addition of new ones similar to them. Now, in the classes which are nearest to the opposite extremity of the series, we find a very different series of phenomena. Instead of the *segmental equality and independence*, which are such striking features in the conformation of the vermiform tribes, we meet with a continual *inequality*, some being highly developed at the expense of others, and some possessing appendages of which others are destitute; and we also find that many segments undergo a more or less complete fusion or *aggregation*, so as to form a composite structure, in which their individuality and independence are almost completely lost. Yet by the study of the history of development in these classes, it may be seen that the segmental independence is at first as complete (or nearly so,) as in the lower classes; but that the process of simple *growth* soon ceases, ending with the production of a comparatively small number of segments, and being then superseded by the process of *aggregation*. "This latter mode of development is carried to a greater extent in insects than in any other invertebrata; and changes the animal, from a simple, elongated, worm-like larva, furnished with many pairs of organs of locomotion, and composed of segments almost uniform in size and appearance, to an individual of a totally different character, with its body divided

into three regions, differing in size and appearance, and separated from each other, with the number of its organs of locomotion reduced, and those that remain greatly altered and enlarged."

The class of *Myriapoda* holds an intermediate rank, both in structure and development, between the two extreme forms which we have noticed. It consists of two groups: the higher termed the *Chilopoda*, and consisting of animals allied to the centipede in external form; and the lower, or *Chilognatha*, containing the iulus or galley-worm, and its allies. In the former, which is carnivorous, the body is mostly flattened and very flexible from side to side, whilst the legs are well developed, and serve as the instruments of locomotion. The segments and limbs are much less numerous than in the latter group; in which the body is usually almost cylindrical and flexible in any direction, the number of segments being very considerable; and the legs, though very numerous, being weak and thread-like, and being destined rather to assist in progression than solely to accomplish it. Altogether it is evident that the iulidæ are much more allied to the inferior vermiform tribes; and the scolopendridæ to the higher groups of articulata. This appears also from the history of their development, which Mr. Newport has carefully studied. (Philosophical Transactions, 1841.) The iulidæ do not come forth from the egg in a condition quite as low as the marine annelids; but the number of segments is out of all proportion to that which the animal is afterwards to possess, being only *eight*, and being subsequently increased even to *ten times* that number, so that the process of *growth* is evidently here predominant. On the other hand, in the scolopendridæ, whilst the production of new segments never goes on to anything like this extent, a considerable degree of *aggregation* takes place. A certain amount of this occurs, however, in *both* orders of myriapods. The head is composed of several segments, (*eight*, according to Mr. Newport;) "either consolidated together like the head in true insects, as in the vegetable-feeding chilognatha; or separated and moveable on each other to adapt them to the carnivorous habits of the rapacious chilopoda. In like manner, each moveable division of the body is in reality composed of two distinct segments, originally separate, but anchylosed together at an early period of their formation. Each of these sub-segments ought therefore to possess its separate ganglion and pair of legs; and this is usually the case. The degree in which this coalescence affects the internal organs, varies greatly in the several families of the class; being much greater, as we shall hereafter see, in the scolopendridæ than in the iulidæ." In the polydesmidæ (which form part of the latter group,) the ganglia remain distinct throughout life in the posterior segments, but coalesce in the anterior, more especially in those nearest the head; so as to foreshadow, as it were, the much greater change which takes place in the thoracic region of insects.

The *Myriapoda* were first raised to the rank of a distinct class by our own countryman, Dr. Leach; and this determination has been generally adopted by recent naturalists, with the exception of M. Brandt, who still attaches the group to the class of insects. But the place to be assigned to it has been a more questionable matter; and many have been the differences in the views on this subject adopted by the several zoologists, who have paid special attention to the group, or who have been engaged in the

construction of general systems. Although Linnæus did not recognize them as a distinct class, he seems to have had a clear notion of their true position in the scale; for he placed them at the end of the apterous insects, immediately before the true vermes,—an arrangement which, as Mr. Newport justly remarks, is in full accordance with the facts now ascertained respecting their metamorphoses and mode of growth, which indicate their close affinity to the latter class. Many subsequent classifiers, however, struck with the resemblance between certain myriapoda and crustacea, on the one hand, and certain myriapoda and arachnida on the other, have placed them *between* these two classes, which are certainly much more nearly related to each other than to the myriapoda. Of late, the tendency has been to place them in close alliance with the wingless insects; on which Mr. Newport makes the following remarks:

“After an attentive examination of the myriapoda, as compared with other articulata, I have been unable entirely to adopt the views of any one of the distinguished naturalists above noticed, either in regard to the situation which they ought to occupy in the arrangement of the invertebrata, or to the affinities by which they are connected with the other classes. They certainly have many close relations to the larva state of true insects in the elongated form of the body, in their mode of respiration, in the structure of the organs of circulation and nutrition, and also in the arrangement of their nervous system; but they differ from them entirely in their mode of growth and development.

“The *myriapoda* acquire a periodical addition of segments and legs, with their separate ganglia, nerves, and other structures. This addition of new parts, at each change of tegument, takes place in all the myriapoda up to a certain period of their growth, which period varies in the different genera. But this addition of parts never occurs in insects, even in the lowest forms of the class, or even in their earliest stages, after leaving the ovum. Every entomologist is aware, that when an insect bursts from the egg, it is furnished with the whole number of segments and legs it is ever to possess; and in no instance does the number of segments exceed fifteen. The usual number, *thirteen*, as naturalists are well aware, is very rarely exceeded; although in some of the hymenoptera, Mr. Westwood and myself have observed fifteen. During the changes of the insect, this number is gradually reduced, by the aggregation and ankylosis of some of the segments to form particular divisions and regions of the body, in the construction of which some of the segments become enlarged, and others are atrophied or almost obliterated. In the *myriapoda*, on the contrary, the young animal invariably comes from the ovum with its smallest number of segments, and in most of the genera this seldom exceeds *nine*; although before the myriapod has arrived at its full growth, it acquires in some species nearly eight times the original number; a definite number of new segments being constantly in the course of formation between the antepenultimate and penultimate segments of the body. This is the great characteristic of the class, which distinguishes the *myriapoda* from *insecta*, *arachnida*, and *crustacea*, and approximates them to the *annelida*, in which a similar addition of parts takes place. The myriapoda are also distinguished from insects by a permanent anatomical character, the number of segments and legs in the adult animal. These are never fewer than *twelve* segments and *eleven* pairs of legs in any genus of the myriapoda. In some genera, the latter even amount to *one hundred and sixty*; while no insect, even in the larva state, has more than *eight* pairs, five of which are rudimentary, and disappear as soon as the four anterior segments have acquired their full growth, and the insect undergoes its metamorphosis, when its legs are reduced to *three* pairs, and the insect passes into a higher state of development. These are the considerations which have led me, with Leach, Latreille, and others, in opposition to the high authority of M. Brandt,

to separate the myriapoda from the true insects, and to place them as a class immediately before the annelida." (Linn. Trans. p. 269.)

The question raised by Mr. Newport as to the order in which the classes of the sub-kingdom Articulata should be arranged, is one of much physiological as well as zoological interest. He considers that the insects ought to stand at the head of the series, that the arachnida should follow, then the crustacea, next the myriapoda, and next the lower vermiform classes. The question is by no means fully discussed by Mr. Newport, however; and we shall pass it by on the present occasion, with the simple expression of our opinion, that it is no more possible to represent the classes of the sub-kingdom articulata, than it is to arrange those of the whole animal kingdom, in any linear series. We fully agree with Mr. Newport in regarding insects as the *types* of the articulated sub-kingdom, that as presenting its peculiar characters in their fullest development. But the nearest approaches to the vertebrate division are not to be found in that class, but rather among the arachnida and crustacea; the latter of which groups seems to have been directly connected with fishes, by species long since extinct.

We shall now follow Mr. Newport through some of the details of his inquiries. The following general facts should be kept in mind, in all comparisons of vertebrated and articulated animals:

"The nervous cord in the articulata is extended along the ventral surface of the body, and it is that portion in each segment which is first completed; while in the vertebrata it is extended along the dorsal surface, which in like manner first acquires its definite form. The dorsal surface of the articulata is occupied by the vascular system, and, like the abdominal surface, at which the nutrient vessels of the body enter, in the vertebrata, is the last portion of the external surface of the body that is completed, as may be readily seen in the development of the animal in the ovum. Consequently the dorsal portion of the tegument in the myriapoda, and other articulata, is less early completed than the ventral, although often developed to a much greater extent." (Linn. Trans. p. 281.)

The following statements regarding the varying modes of development in the different subdivisions of the class, are very interesting:

"In the *chilognatha*, the normal segments produced at each change of tegument remain perfectly distinct throughout life, and only acquire their full size by the first mode of development,—simple growth. But even in the lowest forms of *chilognatha*, in which this first mode is chiefly predominant, the second mode also, the coalescence or anchylosis of two approximated normal segments, takes place almost at the period of their formation. But the original distinctness of the two continues marked throughout the whole life of the animal, so that each moveable segment of the body is formed of two distinct normal *subsegments*. Each of these subsegments retains its legs, both pairs being equally developed. This is the condition of the body in the lowest or iuliform *chilognatha*.

"In the lower forms of the *chilopoda*, the *geophilidae*, there is a progressive change in the mode of development. This takes place in the ovum. The two subsegments of which each moveable division of the body of the perfect animal is composed, and which subsegments are at first equally developed, not only become anchylosed together before the embryo bursts from the foetal coverings, but the posterior of the two exhibits a marked superiority of size. This difference continues to increase at each change of tegument, after the animal has left the ovum, until each anterior subsegment has scarcely more than one half the extent of the posterior. This difference is greatest on the ventral surface, where the sternal



plate of the posterior subsegment covers nearly the whole. Coincident with the beginning of this change and union of each pair of subsegments in the ovum, only one pair of legs is developed to each compound segment, and these have their origin in the posterior of the two subsegments. Notwithstanding this difference in the extent of their development, the rudimentary portions of the anterior segment still exist in the form of minute, partially-detached plates, at the front of the posterior segment, the dorsal arc being represented by a very short transverse portion.

"In the higher genera of *chilopoda*, as in *scolopendra*, the number of compound moveable segments to the body is greatly reduced, and a further union of the two subsegments has taken place." (Linn. Trans. p. 285.)

The upper surface of each moveable segment in this genus is covered by a single plate, on the anterior part of which is only a slight indication of the original existence of the first subsegment, in the form of a narrow elevated transverse band. The remains of this subsegment are more distinct on the ventral surface; but not even the rudiments of appendages are to be found. Now as this is a clear case of the *unequal development* of the two segments, we think it ought not to be ranked in the same category with *coalescence* or *aggregation*; and should suggest to Mr. Newport whether the modes of development distinguished by him, should not be three rather than two.

"It is in this way, by changes that take place in the relative development of the rudimentary segments of the embryo in the ovum, that each animal is originally formed on a comparatively higher or lower type, according to the greater or less extent of change which the embryo undergoes in its earliest stages. The form impressed on the future animal, when these changes in the ovum begin to be arrested, is usually that by which its further development is to be regulated; and which it may retain either as a permanent condition, or only as a form that requires to be further matured in post-embryonic life before it is fitted to take that which it is ultimately to assume. It is in this way that the coalescing segments of *geophilus* become further united in *scolopendra*, and are completely lost in single structures in *lithobius* and *cermatia*; in each instance the union of the rudimentary segments taking place in the ovum, and the type of formation then impressed on the animal being afterwards uniformly repeated at each change of tegument and production of new segments.

"The mode in which development takes place, by a union of similar parts, is always *centripetal*. When any portion of the body has acquired its fullest extent by the *first* mode, that of simple growth or enlargement, it acquires a tendency to coalesce or become united with similar adjoining structures, either by simple ankylosis of the two, or by a greater or less extent of direct union or coalescence; and the two parts which thus become joined, tend to one common centre.

"What takes place in regard to individual structures, takes place also in the whole body; as is shown in the transformations of insects. While some segments of the body of an insect become more or less completely approximated in sections, and divide the body into regions, the whole exhibit the same tendency to approach each other; the head is applied more closely to the thorax, and the thorax is approached by the abdomen.

"These, then, are the principles, on which the body of an articulated animal is developed, and acquires its proper form and dimensions; and which are carried to their greatest extent in hexapod insects. They seem to prepare the way for a higher type of development, at a much earlier period of the ovum, of the vertebrata, and to lead to the permanent division of the body, in the more perfect animals, into important regions,—the head, thorax, and abdomen." (Linn. Trans. p. 287.)

Mr. Newport then proceeds to inquire into the structure and development of the head of Myriapoda; from which he believes (and we fully accord with him) that the most certain indications may be drawn in regard to the normal number of segments entering into the composition of this part in articulated animals. Many attempts have been made to ascertain this fact, by examining the head in hexapod insects; but in consequence of its higher type of development and more compact form in that class, the results arrived at by the several naturalists who have engaged in the inquiry, are by no means uniform. The different conclusions seem to have arisen from the fact, that the number of segments is in reality more considerable than has been usually supposed; and that, in certain species which have been examined, every trace of some of the segments has disappeared; whilst the very same parts may be enormously developed, and others atrophied, in a different genus. On this inequality depends the form of the organ. Thus Burmeister recognizes but *two* segments; Carus and Audouin *three*; Macleay and Newman *four*; and Strauss-Durckheim as many as *seven*. But Mr. Newport now adduces strong evidence, that even this last number is insufficient; and that we must reckon *eight* as the real amount. This result is attained, by tracing the changes of the myriapod from the ovum, and by comparing the adult forms of the different genera; and the same mode of investigation fully confirms the original views of Savigny, that the parts of the mouth are the analogues of the organs of locomotion, and acquire their various forms in consequence of the different extent to which their individual parts are developed. Thus, in the Chilopoda, the head is formed of two moveable distinct portions, well seen in the Scolopendra; the anterior of these is denominated the *cephalic*, and the posterior the *basilar* portion. Each of these is originally composed of four sub-segments; as may be most distinctly traced in the inferior genera of that order, in some of which the parts composing the basilar division never completely unite, but those forming the cephalic division coalesce at the time of the emersion from the egg. Each subsegment, like the segments of the body, normally bears a pair of appendages of some kind. That the *first* bears the antennæ, which are largely developed in geophilus, whilst the segment itself is atrophied. The *second* does not give origin to moveable appendages, but contains the eyes; it is more developed than the first, and is almost entirely occupied by the great centre of the animal functions and instincts,—the brain. The *third* is developed to a greater extent than the second; and gives origin to appendages which are the first moveable parts of the organs of nutrition, the internal maxillæ. The *fourth* subsegment is equal in length to the whole of the three anterior segments; and bears as its appendages certain large, three-jointed, palpi-form organs, which seem to represent the external or maxillary palpi of insects. Shortly after the animal has left the ovum, the cephalic segments are nearly all of the same size; but the first soon shows a retardation, and the fourth an acceleration, of growth. The *fifth* subsegment, which is the first that enters into the basilar portion, bears the labial palpi; and the *sixth* bears the large forcipated mandibles. "The mandible, at the bursting of the egg, is only a simple tubercle to the sixth segment of the head, precisely similar in every respect to form and size, to the tubercles of other segments of the body, which afterwards become legs or organs of locomotion, &c. But

during the short space of time that elapses while the embryo is escaping from the egg, and before it has rid itself of the foetal membrane, this little tubercle is enlarged to twice the size of the others, and continues to increase rapidly; at the same time undergoing a change in the relative development of its parts, which so modifies its whole form, as to adapt it for the function of prehension and manducation, instead of locomotion." The central portions of the fourth, fifth, and sixth segments enter into the composition of the mouth. The *seventh* and *eighth* subsegments generally unite at an early period, and sometimes coalesce with the anterior segments; their appendages are sometimes developed as true legs, and are sometimes atrophied, still however showing traces of their regular existence; but in the lithobius these are altogether wanting, the whole basilar region being reduced on the dorsal surface to a narrow ring, and the cephalic region being enormously developed.

We have entered so far into the details of this curious investigation, as an illustration of the necessity of prosecuting any such inquiry regarding the elements of the cranium of vertebrata, on the method which Mr. Newport has so successfully adopted and carried out;—namely, by selecting the group in which the parts are most distinct, and then comparing the several variations which the adult forms present, with the more uniform type manifested in the embryo. We anticipate most interesting results from Mr. Newport's application of the same method of inquiry to the composition of the head in insects. It would be quite beyond our province to enter into those details of the external anatomy and zoological arrangement of the myriapoda, which make up the remaining part of this paper: we may, however, state, in passing, that the paper is a complete monograph of the class, and that, besides establishing several new families and genera, Mr. Newport has here minutely described about 140 new species, and given many important observations on their natural history and habits.

The next on our list relates to the anatomy and physiology of the Nervous and Circulating Systems in this class, and also in the Macrourous Arachnida. The portion of this which relates to the nervous system of the myriapods, has passed under our review on a former occasion, (vol. XVII, p. 181 et seq.) so far, at least, as regards its bearing upon the doctrines of reflex action. We have now, therefore, only to notice the facts relating to the *development* of the nervous system; which, for the reasons already mentioned, can be studied particularly well in this group.

The account of the posterior portion of the nervous system in *polydesmus maculatus* affords the most information on this subject. In this animal, the number of segments is twenty-two, including the head and anal segments; and the number of distinct ganglia in the cord is thirty-four, each supplying one pair of organs of locomotion. The anterior portion of the cord presents some modifications, partly connected with the generative apparatus; but posteriorly to the fourth segment in the female, and the seventh in the male, the cord is extended backwards, nearly in a uniform manner throughout the remaining segments, as far as the thirty-second ganglion, when it becomes less uniform. In the first part of its course, it forms two ganglia in each segment; the interval between these being about half that which exists between the last ganglion of one segment and the first of the preceding. Each ganglion sends a pair of nerves to the

legs; but the trunks which supply the muscles and sides of each segment are given off from the cord, midway between the two ganglia. In proceeding backwards along the cord, however, the distance between the ganglia of each segment is gradually lessened, and at last they almost unite; and the nerves which come off from the cord between the ganglia are found to arise nearer and nearer the ganglion next behind, until they cease to come from the cord, but are derived directly from the ganglia. But although the ganglia are thus closely collected together, this is not the result of *aggregation* in this part of the body, but is consequent upon the non-completion of those changes which take place in the formation of new ganglionic centres and nerves in this part of the cord, and which are carried to a much greater extent in the iulidæ. These formations always take place between the penultimate and antepenultimate segments; and it is in that part of the cord, therefore, that the new ganglia are produced to those segments. When comparing the ganglia, cord, and nerves, therefore, in the segments of most recent formation, with those of the segment next anterior, and so progressively forwards, we are in reality studying the progressive stages of development of these parts. From such a comparison, Mr. Newport arrives at the following conclusions:

"The cord is elongated in the ganglia, by extension or growth longitudinally; and those nerves which are given to the sides of the segments and to the respiratory structures, and which originally are formed in the ganglia or in immediate connexion with them, are gradually separated from them, and are afterwards attached only to the interspaces of the cord, so that they are removed to a greater distance from the ganglia, in proportion to the earlier development and more complete state of the segment to which they belong. This elongation of the cord commences in the posterior ganglion, at the front of which, apparently by separation of part of its own structure, the new ganglion of each last-formed rudimentary segment is always produced. Hence the ganglia must be regarded as performing a most important office in the nervous system, that of being centres of growth and nutrition to the cord and nerves. The structure of the ganglia confirms these conclusions, and shows that not only are these parts centres, in which the reflected motions of the limbs are effected, but that they are even of more importance, being those in which the structures themselves are nourished. The vessels distributed over the ganglia penetrate into their substance, and are more abundantly supplied to them than to any other parts of the nervous system." (Phil. Trans. 1843, p. 256.)

There is another point of great importance in relation to this subject, which we must here notice more particularly. In our former notice of this portion of Mr. Newport's paper, having been exclusively concerned with his discoveries on the structure of the ventral cord and his experiments on reflex action, we overlooked his brief but very interesting remarks on the structure and development of the cephalic ganglia, which are commonly spoken of as the brain. To the brain of vertebrata as a whole, however, they cannot be justly regarded as corresponding; their real analogy, first pointed out by Mr. Newport in 1838,\* being to the corpora quadrigemina. In the head of the myriapod, the *first* pair of ganglia is of small size, and its branches are distributed to the antennæ; and it is the second pair, immediately behind them, which is obviously the principal centre of the sensori-motor portion of the nervous system. These give off

\* Observations on the Anatomy, Habits, and Economy of *Athalia Centipedia*.

nerves to the eyes; but are more highly developed than the antennal ganglia, even when the organs of vision are entirely wanting, as in the polydesmidae. Their relative size increases, as we ascend to the higher classes; and a remarkable increase presents itself during the metamorphoses of insects. The following statement in regard to the development of these ganglia, appended by Mr. Newport in a note, is of great interest.

"Since this paper was delivered to the Royal Society, I have found that, in the embryo of *geophilus longicornis*, at the moment of bursting its shell, the brain is composed of *four* double ganglia, the centres of a corresponding number of segments, which are then becoming aggregated together to form the single moveable portion of the head in the perfect animal; so that the brain of the myriapod, and probably also of all the higher articulata, is, in reality, composed of at least four pairs of ganglia." (Phil. Trans. 1843, p. 245.)

This fact is one of much importance, not merely from its bearing upon the composition of the cephalic ganglia, in those articulata in which all trace of the original distinctness of their component parts is lost, but also as indicating the probability of a similar process of coalescence in the early development of the brain of vertebrata. It is well known that such a mode of accounting for the arrangement of the cerebral nerves, and of the bones of the cranium, has been proposed by various philosophical anatomists; but it has been treated by those incapable of comprehending it aright, as a visionary piece of transcendentalism. The fact being thus established by Mr. Newport, however, in regard to a group of animals in which it had not been at all suspected, the probability obviously becomes much stronger in the vertebrata. The first ganglion of the ventral cord, which is situated upon the point of junction of the two crura that pass downwards around the oesophagus, obviously corresponds in function, not to the cerebellum, but to the medulla oblongata of vertebrated animals; and this has been found by Mr. Newport to be formed by the coalescence of the first four suboesophageal ganglia, belonging to the four segments that constitute the posterior portion of the head.

We now pass on to Mr. Newport's account of the Circulating System in the Myriapoda; a department of comparative anatomy which has hitherto been very ill understood, but on which he has thrown all the light that skill and industry could afford; so as, in fact, to have most completely elucidated it. The existence of a motion of the fluids of the articulata has long been known to the microscopic observer; but notwithstanding this, and the evidence of a distinct pulsatory action of the great dorsal vessel, as seen through the tegument in the transparent larvæ of insects, and notwithstanding, too, that the circulating apparatus of the higher crustacea had been proved to be most complete, the existence of a true circulation in insects and other air-breathing articulata was doubted, until the fact was demonstrated by Carus and confirmed by Wagner and others. Yet the means by which this circulation is carried on, whether in vessels with distinct parietes, or in sinuses bounded by the other structures of the body, is still a matter of inquiry; and the existence of vessels in insects has recently been denied by no less an authority than Leon Dufour. The most important contribution to our knowledge on the subject, up to a recent period, was that of Strauss-Durckheim; who, in 1825, discovered the existence of distinct chambers and valves, with lateral orifices, in the dorsal

vessel of insects; but he was unable to discover any vessels connected with, or proceeding from that trunk. In the myriapoda he found that the anterior portion of this structure in the scolopendra divided into three branches, which are distributed to the head; and that the middle one of these gave off other branches, the course of which he was unable to trace. Previously to this, in 1812, Treviranus had discovered some of the peripheral vessels in the arachnida; and Müller, in 1824, had traced a vascular connexion between the dorsal vessel of insects and the ovaries. Various isolated facts were subsequently contributed, in regard to insects, by Mr. Newport; and in regard to the scolopendra, by Mr. Lord, who was first to demonstrate the vascular character of what is now termed by Mr. Newport the supra-spinal vessel, which had been previously described by Treviranus and Mr. Newport himself, as a part of the nervous system; and by Müller as a ligament. Comparing insect and human anatomy, we might say that the amount of knowledge previously attained related solely to the heart and aorta, and a few isolated trunks in other parts; and that Mr. Newport's merit, in the researches of which we are now going to give an abstract, is as if he had traced out the whole of the arterial system, proceeding from the aorta, a great part of the venous, and (in the scorpion) the whole pulmonary system in addition; besides determining the course of the circulation through the complicated series of vessels he has discovered.

We presume our readers to be aware, that the *dorsal vessel* consists of a longitudinal series of chambers, connected by orifices; each chamber, in fact, representing the heart of its own segment. At each constriction of the heart in the iulidæ, between two chambers, there are two transverse lateral orifices, as in insects, through which the blood enters the organ; these are regarded by Mr. Newport as the orifices of delicate veins, although he is not quite certain whether the veins do not rather deserve the term of sinuses. The heart is inclosed in a delicate membrane, which excludes it from the surrounding structures; this covering ought certainly to be regarded as a pericardium, and not as an auricle, which it was supposed to be by Straus. In all the iulidæ, the heart gives off, in each moveable segment of the body, two pairs of branches, which pass to the sides of the body and to the viscera; these vessels, which have not been hitherto described, are regarded by Mr. Newport as *systemic arteries*. The anterior chamber of the compound heart descends upon the œsophagus, near its termination in the stomach; and from it proceed three pairs of arterial trunks, which pass down on either side of the œsophagus, and unite beneath it, thus forming three vascular collars around this part of the alimentary canal, very similar to those which are more multiplied in some of the annelida. The distribution of the vessels proceeding from these vascular collars is very similar to that which we see in the Batrachian reptiles during their fish-like condition; for whilst some of them pass forwards to supply the head, the main trunks of the first pair unite below the œsophagus to form the great median vessel of the abdomen, which, being situated between the nervous cord and the viscera, obviously corresponds with the aorta of vertebrata. Hence Mr. Newport very appropriately designates this pair as the *aortic arches*.

"In this general structure of the circulatory organs in these vermiform articu-  
lata, we perceive a shadowing-out of the great circulatory organs of the higher

animals. The ventricular heart, with its aortic arches and great descending aorta, is rudely sketched in this many-chambered great dorsal vessel or heart of the myriapod, with its lateral arches uniting below the œsophagus to form the great channel for the blood to the organs of locomotion and sides of the body—a structure of which the type of formation is continued uninterruptedly, but gradually increasing in complicacy and importance as we ascend through this and the other classes of the articulata, to the lower forms of vertebrated animals.

“In the observations already detailed on the nervous system of these animals, I have shown that each moveable segment of the body is double, and is formed originally of two segments, which are anchylosed together from a very early period of growth; and that, as the segments in the anterior part of the body become more and more nearly approximated, the gangliated portions of the nervous cord in those segments also become closely united. Now what occurs in this respect in the nervous system, takes place also in the vascular. Each double segment of the body in the *iluidæ* contains, at an early period of growth, two distinct chambers of the heart, each giving off its pair of arterial vessels, and furnished also with its two pairs of lateral muscles. I have found these chambers distinct, and still separated, in *tulus terrestris*, so late in life as that which I shall hereafter have occasion to describe as the *ninth period of development*, when the individual possesses forty-four moveable segments. After that period the two chambers in each double segment unite and form but *one* chamber; while the reduplication of the muscular tunics, which form the boundaries of each double chamber, and in which are situated the auricular openings, becomes more complete. Each chamber of the heart, in the adult *iluidæ*, has therefore two pairs of systemic arteries, and four pairs of lateral muscles. The union of the two chambers seems to be occasioned by the growth and changes induced in the external coverings of the body, at the period when the animal undergoes its semi-metamorphosis, or change of tegument.” (Phil. Trans. 1843, p. 277.)

In the *chilopoda*, which form the higher division of the class, the *contractile* tissue of the chambers of the compound heart, as also the great abdominal trunk formed by the union of the aortic arches, are much better developed than in the *Chilognatha*; and we shall therefore introduce Mr. Newport's descriptions of these parts in the scolopendra or centipede.

“The heart is composed of two distinct contractile tunics, an external and an internal one, each covered by its proper serous membrane. The *external tunic* is covered by the membrane that forms the inner layer of the pericardium. It is a very thick muscular structure, the fibres of which are loosely interwoven with each other. It completely incloses the second or inner tunic—the proper ventricular structure—from which it may be separated without difficulty; and it also forms the external covering of the systemic arteries at their origin, and may be traced along them to some distance from each chamber. The action of its fibres seems to be chiefly in the longitudinal direction, and thus to assist mainly in shortening of the vessel. The *inner tunic* is formed of two sets of muscular fibres. The inner one of these, covered by a delicate membrane, lining the ventricle, consists of longitudinal fibres, which are most perfectly developed on its upper and under surfaces, and which are extended throughout its entire length, from the posterior segment to the head. The other set, which is external to this, is formed of numerous short, broad, transverse muscular bands, very much resembling in appearance the cartilaginous rings of the trachea in vertebrated animals. These transverse muscular bands are thicker and stronger than the longitudinal fibres, and form the sides of this tunic. They do not completely encircle the longitudinal ones, but pass only half way round, on each side, having a space between those of the two sides, both on the upper and under surface. This space is occupied by the principal longitudinal fibres, to the sides of which the extremities of these transverse bands are approximated. They are not, however, all arranged in one

parallel longitudinal series, but are placed alternately nearer to, or more distant from, the median line." (Phil. Trans. 1843, p. 230.)

This curious arrangement of the transverse fibres is stated by Mr. Newport to exist in the systemic arteries given off from each chamber of the heart, as well as in the parietes of the heart itself; and he suggests it as a curious point for inquiry, whether it is common also to the arterial trunks in vertebrated animals. It seems difficult to assign a use for it; unless it be to favour that successive peristaltic action, which is here required, rather than the simultaneous contraction, to which a series of complete rings might be expected to be subservient. The auricular orifices formerly noticed are here provided with distinct valves. From the posterior-lateral margin of each orifice, a series of oblique fibres passes diagonally forwards, in the interior of the chamber; until, meeting in the middle line, they form a double valve, with its apex directed forwards, very similar in appearance to the tricuspid valve in the heart of mammalia. This valve is extended forwards from the upper surface of each chamber, a little beyond the outlets of the systemic arteries, and prevents the return of the blood from the anterior part of the chamber.

The great ventral artery,—which lies upon the nervous cord, and is hence termed *supra-spinal* by Mr. Newport (a term that appears to us objectionable, as tending to obscure the analogies of this vessel in the vertebrata.)—originates, as in the iulidæ, from the reunion of the first or principal pair of the arches forming the vascular collar; but it receives branches, also, from the secondary arches. It extends, along the median line, as far as the terminal ganglion of the last segment.

"At its commencement, it is nearly equal in size to the great nervous cords along which it is extended; becoming gradually smaller as it approaches the posterior segments of the body. The situation of this interesting structure, relatively to that of the nervous cord, the alimentary canal, and the other organs of the body, its connexion by vascular arches with the last ventricle of the heart, and the course of the blood which it distributes, all strongly remind us of its similarity to the great aorta of vertebrata, and of the analogies which the whole of the vascular structures in these worm-like articulata bear to those of fishes and amphibia, and the earlier condition of the fœtus in the higher animals. As it passes backwards along the cord, this spinal artery gives off a pair of branches above the anterior part of each ganglion . . . . until it has reached the last segment of the body, in which it is scarcely more than one third of its diameter at its origin in the third segment. Immediately above the last ganglion, the artery itself is divided into two principal branches, with only a very minute median one between them. These branches take the course of the terminal nerves of the cord, and are distributed with them to the last pair of legs and surrounding structures." (Phil. Trans. 1843, p. 283.)

Mr. Newport gives a minute description of the distribution of the lateral branches above mentioned. Each of them subdivides into four branches: of which the first three are distributed, with the three principal nervous trunks given off on each side from the ganglia, to the muscular apparatus of the body and legs; whilst the fourth, which is the smallest, proceeds exclusively, with the fourth division of the nerve, to the tracheal vessels and parts concerned in respiration. Some idea of the minuteness and extent of the arterial distribution, in animals in which no distinct blood-ves-



sels had ever before been traced, may be formed from the fact, that Mr. Newport has ascertained the structure of the heart itself to be copiously supplied with nutrient branches; and he also states that in the peritoneum there is an extensive ramification of circulatory and tracheal vessels, intermingled with each other in the most complex manner.

In the family *Scutigera*, we meet with a very interesting condition of the circulating system; which affords a still further proof of the principles advanced by Mr. Newport, touching the union of two or more original parts in the complete development of every structure. We have already seen this principle illustrated, in the progressive development of the *iluidæ*, two of the chambers of the heart being actually fused into one, in each moveable double segment; and we find, in the *scutigera*, that the compound heart possesses, as its permanent structure, a condition which seems to form the obvious transition towards that of the dorsal vessel of insects.

"In this family, the number of chambers is still fifteen, as in *lithobius*; in which the dorsal plates of the body are alternately longer and shorter in the different segments, to the respective lengths of which the chambers of the heart are begun to be reduced. This is a condition preparatory to the union in pairs, first of the dorsal plates, and afterwards of the chambers of the heart. In the *scutigera*, the dorsal plates are already united, and form but eight moveable coverings, one to each pair of segments, which still remain distinct on the ventral surface of the body. But although there are still sixteen chambers to the heart, the changes commenced in *lithobius* are carried still further in this genus; and each alternate chamber is very much smaller and shorter than the one next before it, and covered by the same dorsal plate. But although the union of the chambers has actually commenced, it is yet very imperfect, and the original divisions between them are still evident, and the systemic arteries pass off from their sides as in their imperfect state of development. But very little blood enters at the auricular orifices, which still exist in these unions. The chief part now enters through the large auricular orifices of the chambers in the middle of each dorsal plate. These are very distinct, but are placed more transversely to the heart than in *scolopendra*, corresponding to the more obtuse form of each chamber, and the more compact general form of the whole heart. Here then, in the gradual reduction of the number of the chambers, their compact form, and the shortening of the organ, we trace the stages of the formation of the heart in insects, in which there are seldom more than eight chambers." (Phil. Trans. 1843, p. 286.)

Mr. Newport next proceeds to investigate the Circulating apparatus of the *Scorpion*, as an example taken from one of the higher articulated classes. This animal had previously occupied the attention of anatomists; but its vascular system had been very imperfectly understood. *Treviranus* in 1812 described it vaguely; and first noticed the structure now described by Mr. Newport as the supra-spinal artery, as part of the nervous system, considering it a peculiarity of the nervous system of the scorpion. The same structure was afterwards noticed by *Müller* in 1828, but was regarded as a ligament. Both these anatomists entirely overlooked the extensive distribution of vessels from the anterior extremity of the heart in the cephalothorax. We shall not follow Mr. Newport through the minutiae of his descriptions; but shall content ourselves with indicating some of the most important points, in which the vascular system of the scorpion differs from that of the higher myriapoda. Notwithstanding the strongly-marked diversities in external form, and in the relative development of different

organs, the degree of correspondence is such, as to indicate most completely the conformity of plan in the two cases; and Mr. Newport has found the study of the comparatively simple and regular distribution of vessels in the myriapoda, an admirable key to the elucidation of the more complex and varied arrangement, which is required in the scorpion, by the more *heterogeneous* character of its general structure. Thus the great dorsal vessel, which runs as in the myriapods from one extremity to the other, only possesses the character of a heart in the anterior portion, which lies in the body of the animal; the posterior, which is contained in the tail, being contracted into a simple arterial tube. The heart is divided into eight separate chambers, which are wider in proportion to their length than in the highest of the myriapods; and which are more muscular and compact, in a degree proportionate to the greater quantity of blood to be transmitted through them, and to the force with which it is necessary to be propelled. The valves or divisions between the successive chambers are each formed by a reduplication of the whole muscular structure of the dorsal surface of the organ; but there is no complete corresponding fold, and in some chambers no fold at all, on the under surface. The reason for this imperfect structure of the valves may perhaps be found in the fact, that the blood is distributed from the heart in the scorpion in opposite directions, partly backwards to the tail, but chiefly forwards and outwards to the head and sides, as in the myriapoda; and hence it may be necessary that a reflux of blood should not be entirely prevented, as may be required in those instances in which the whole current is in one direction. The uniformity of principles on which the circulating apparatus is constructed, is remarkably displayed in the distribution of the aorta to the limbs and head, in the aggregation of segments that constitute the cephalothorax of the scorpion.

"We have seen that vessels are given off from corresponding parts in the chambers of the heart, both in the myriapoda and the scorpion; and that these vessels, the *systemic arteries*, are given to precisely similar parts in both. In the myriapoda, the anterior pair of these vessels form a vascular collar around the oesophagus in the posterior region of the head; and this also is the case in the scorpion. The median continuation of the vessel beyond this collar in the myriapoda is given to the head, to the brain, optic nerves, antennæ, and internal parts of the mouth; while the external parts of the manducatory organs, the great foot-jaws or mandibles, are supplied from the vascular collar, or from parts immediately connected with it. Now, notwithstanding the aggregation of all these parts together, as well as of the proper organs of locomotion, the trunks of the arteries still preserve their original distinctness, and enable us to identify the organs and parts of the head of the scorpion with organs that exist under other forms, although endowed with similar functions, in the more distinctly-developed head of the myriapods and insects." (Phil. Trans. 1843, p. 289.)

Thus Mr. Newport has obtained a clue to the identification of the great prehensile claws, which are the special organs of the head of the scorpion, with the foot-jaws in the centipede, and the mandibles of iulus and of insects. And in the same manner, the small prehensile organs in front may be identified as the analogues of the antennæ of insects; and these, although so remarkably altered in form, from a simple, elongated, many-jointed organ, to one of a prehensile character, still retain the same primary function—that of touching and feeling—as in their less complicated structure. The contraction of the posterior segments of the scorpion into a tail, has

been already noticed as affecting the character of the posterior part of the dorsal vessel; but even the anterior portion, which serves as a heart, is also affected by it. The last two chambers, which are situated in the seventh segment and give origin to the caudal artery, are greatly reduced in size, and seem to be the means by which part of the current of blood is directed *backwards* to the tail. Each of these chambers receives its venous trunks in a direction more transversely backwards than the other chambers; so that the influx of the received blood is directed backwards. The visceral arteries from these chambers are altered in their direction; for instead of passing laterally and forwards, they give off only a small trunk forwards and to the sides of the segments, while their principal trunks are directed backwards. The distribution of the branches of the caudal artery is very similar to the course of the visceral arteries which have been described as arising from the chambered portion of the dorsal vessel,—one pair from each chamber.

The scorpion presents a system of vessels, however, specially connected with the respiratory function; of which the myriapoda seem almost or entirely destitute. The aeration of the blood, in the latter, is effected by means of *tracheæ* widely diffused through each segment; and there is no occasion, therefore, for any special vascular apparatus to bring the blood to the respiratory organs. But in the arachnida, the plan of the respiratory apparatus is different; the aerating surface being concentrated in a small number of organs termed *pulmonary branchiæ*, whose structure will be presently noticed. In order to convey the blood to these, a special system of vessels is necessary; this collects the blood from the system at large, and transmits it to the branchiæ; from which it is returned back to the heart by a large sinus. This set of vessels is termed by Mr. Newport the *portal system*, from its analogy to the portal system of vertebrata; but as its function is so different, and as it is still more analogous to the system of vessels in crustaceans and molluscs, which stand in the same manner between the systemic and respiratory capillaries, we think the use of this term objectionable, and we shall term it the *branchial system*. The centre of this system is a hollow fibrous structure, which seems to form a kind of sinus, closely surrounding the nervous cord; from the posterior part of this, the *subspinal* vessel passes off, which runs beneath the nervous cord as far as its termination; and from its sides two pairs of trunks proceed towards the first pair of respiratory organs, receiving in their course numerous small vessels from the sides of the segments. The posterior pairs of branchiæ are supplied from the subspinal vessel, by branches which in like manner collect the venous blood from the neighbouring parts; and this vessel also receives blood direct from the caudal artery or posterior prolongation of the dorsal vessel. The anatomy of the pulmo-branchiæ, (which had been previously described correctly by Müller, as being each formed of a multitude of closely-approximated thin double lamellæ, through which the blood is distributed, and brought by endosmosis into communication with the air admitted into the common cavity of the branchia, through the spiracle on the exterior of the body,) has been more minutely investigated by Mr. Newport; and his account contains some facts of interest, which we shall quote:

“Each side of these double lamellæ is formed of an exceedingly delicate and apparently structureless double membrane, which includes within it a parenchyma-

tous tissue, formed of single vesicles or cells, in which I have been unable to detect any nuclei. These cells exhibit the appearance of simple bodies, from which it might well be conceived that vessels might be formed. In some places these vesicles are arranged more in distinct series, and are also slightly elongated. The whole parenchymatous tissue of the lamina is made up of these cells, which are larger and more elongated, and assume a slightly conical appearance near where the air enters at the base of each plate, in which part these cells are nearly uniformly distributed within the double membrane. But in the upper or more convex portion of each lamina, numbers of these double cells are aggregated together in numerous, irregular, rounded patches, which thus produce a tuberculated or glandular appearance in the laminae. These aggregations of cells are more thickly interspersed through the structure of the lamina, the nearer they are to its convex margin, where I have sometimes seen what I believe to be delicate but exceedingly indistinct vessels penetrating the lamina, but which could be followed only for a very short distance into it, among the cells. The convex margin of each lamina is, however, bounded by a delicate but distinct vessel, which seems to form the means of intercommunication between the anastomosing network of vessels distributed over the branchiæ, and the structure of the laminae; since the delicate evanescent vessels traced into the laminae, are derived from those which bound their convex margin. I have also observed vessels extended from these marginal vessels on the laminae; which I regard as the anastomoses between these, and those which cover the whole branchiæ, and distribute the blood from the portal branches." (Phil. Trans. 1843, p. 296.)

The blood would seem to permeate the cellular parenchymatous tissue of each double lamella, and to be brought into relation with the air, when the branchiæ are distended during respiration, by endosmosis through the membranes, exactly as in the lungs of higher animals; the blood is then collected in sinuses, of which one originates from each lamella; and these form, by their union, a series of larger trunks or sinuses, which pass around the sides of the body in the posterior part of each segment, communicating with other vessels in their progress, and at last pouring their contents into the heart, at the auricular orifices on its dorsal surface. Besides this respiratory system of vessels, the branchiæ receive arterial branches, apparently for the nourishment of their tissues, as in higher animals. The cavities of all the branchiæ on either side (four in number) communicate directly with each other by a short narrow passage; so that the whole on one side of the abdomen forms one common cavity or lung-like organ, like the large tracheal vesicles in the abdomen of perfect insects, and thus ensures an uniformity of function at each act of inspiration.

The following is Mr. Newport's account of the course of the circulation in the scorpion; for which, we hope, our readers will now be sufficiently prepared by the anatomical details we have given:

"The blood received by the veins from the branchiæ is conveyed to the heart round the sides of the segments, receiving accessions from other segments in its course; and enters the heart at the posterior part of each chamber on its dorsal surface, through the orifices of Straus. The auriculo-ventricular cavity, dilated by the influx of blood, begins first to contract by the action of the circular fibres at the posterior part of each chamber. By this contraction, part of the blood is at once propelled laterally by the systemic arteries to the interior and sides of the body; while the remaining and chief portion is forced onwards through the valves and body of the chamber, by the successive contraction of the circular fibres, into the next chamber. A fresh accession of blood enters the heart at the auricular orifices, in the short interval of time that elapses between the contractile actions of the two chambers; which interval is probably occasioned by the reaction of the lateral muscular

appendages of the organ. These contractions, commencing in the principal chamber in the sixth abdominal segment, are carried gradually onwards through the whole of the succeeding segments; so that, ere a third chamber has contracted, the first is again filled and ready to be emptied, thus occasioning by their alternate movements those pulsatory motions observed in all instances in which the heart is formed of a longitudinal series of chambers and valves, motions which are so well known in insects. The blood, propelled by these successive contractions through the dorsal vessel, is distributed to the organs in the head and thorax and the organs of locomotion. Part of it also is sent round the *aortic arches*, through the supra-spinal artery [or aorta,] *backwards* into the abdomen, giving off its minute currents for the nourishment of the cord, whilst another portion intermingled with that collected in the portal vessels is sent to the branchiæ. But its principal current still flows in the spinal artery, along the upper surface of the cord, to the terminal ganglion of the tail; where it is divided into four streams, two of which go out at the sides of the ganglion to nourish the segment, while the other two, now greatly reduced in size, proceed backwards along the terminal nerves of the cord, and becoming more and more subdivided in the last segment of the tail, are diffused through the surrounding structures. These form minute anastomoses with numerous small vessels, which gradually collecting in separate trunks on the under surface of the last segment, form the origin of the caudal portion of the sub-spinal vessel, which conveys the returning blood *forwards* from the tail to the abdomen, to be aerated in the branchiæ before it is again transmitted to the heart. In like manner the blood that has already circulated through the organs of locomotion, the cephalothorax and abdomen, appears to be collected in the *vena cava* which transmit it to the branchiæ before it is again employed in the circulation. Throughout the whole of its [backward] course along the [supra-spinal] artery in the tail, the blood is passed in small currents, both anterior and posterior to each ganglion, into the subspinal vessel; thus intermingling the venous and arterial blood, precisely as occurs in the abdomen. But the circulation in the caudal prolongation of the heart yet remains to be explained. We have already seen that the great dorsal artery in the tail, above the colon, forms direct vascular anastomoses around its sides, with the subspinal vessel on the ventral surface, in which the course of the blood is *forwards* to the abdomen. It is certain, therefore, that the action of the great chamber of the heart must impel the blood at once in every direction, chiefly forwards and laterally, but also in part *backwards* along the caudal artery; otherwise it would be impossible for this structure to form its anastomoses with the subspinal vein without occasioning two opposite currents in the same vessel; and this diversion of the current may perhaps be effected through the interposition of the two imperfect chambers of the heart in the last abdominal segment." (Phil. Trans. 1843, p. 298.)

Thus by his patient and minute investigations, Mr. Newport has succeeded in showing the existence of a circulating apparatus in these animals, which is scarcely inferior in extent and complexity to that of the highest vertebrata, although formed upon a very different plan. When we compare his descriptions with the vague and general terms in which the vessels of the air-breathing articulates have been until hitherto described, we cannot but acknowledge the immense advance which he has made on our acquaintance with the subject, and express our admiration of the skill and industry with which he has carried out the investigation. The entire paper, as remarked by a distinguished *Savant*,\* "is crowded with facts precious to science."

It now only remains for us to notice the most recently-published of Mr. Newport's Papers, "On the Reproduction of lost parts in Myriapoda

\* M. Milne Edwards, in *Annales des Sc. Nat.*

and Insecta;" to the general results of which we must confine ourselves. It has long been known to every naturalist, that the crustacea and arachnida are capable of reproducing their limbs; and it has also been stated, that a similar reproduction of parts takes place in some of those insects which are active throughout their whole life, and do not change their form, but merely cast off their teguments and increase in size. But it has been questioned whether any reproduction of lost parts can take place in those insects, which undergo a complete metamorphosis, and which change their form, their food, and their mode of life, in passing from the young to the adult state. No investigations having been yet made, to decide the question whether the regenerative power exists in insects that undergo these changes, or in the class myriapoda, the subject has been taken up by Mr. Newport; who has arrived at the most satisfactory affirmative results. His experiments on the myriapods were of course restricted to species that inhabit our own country; and these, as is well known, are but diminutive representatives of the gigantic iuli and centipedes of warmer climates. But the evidence which they afford is quite satisfactory, especially when confirmed by appearances not unfrequently met with in preserved specimens brought from abroad. Having cut off one of the antennæ, and some of the legs, of iuli which had attained nearly their full development, he found that, at the next moult, these parts were reproduced; the new parts being much smaller and shorter, however, and the articulations of the new joints being less perfect than the old. It does not appear necessary that, for the regeneration of one part, the entire organ must be removed, as seems to be the case with the limbs of certain crustacea;\* but reparation begins in the part in which the injury occurs, and the new structures produced are only sufficient to replace those which have been removed. The regenerative power seemed to be greater in those individuals, which were still adding considerably to the number of the segments at each moult, than in those which had more nearly acquired their full growth; thus in two instances there were only six joints, instead of seven, to the new antennæ; and these individuals had so nearly reached their adult state, that each acquired only one new segment to its body at this change of tegument, the succeeding change being probably the last. Similar results were obtained from experiments on the *Lithobius vulgaris*, one of the chilopoda; and in these it was seen that the reproduced legs gradually acquired the full size proper to the limbs.

"These facts sufficiently show, that a power of reproducing lost parts is quite common to the lithobii; and the frequent occurrence of legs that have not their full size, in specimens of foreign *scolopendra*, lead to the conclusion that it is equally common to these animals. There are many instances of this in the collection in the British Museum; in the majority of which, it is one of the posterior legs that has been reproduced. From the number of specimens I have met with, in which this is the case, I have been enabled to arrive at the conclusion, that although reproduced limbs in these animals may ultimately attain the full size of the normal structures, they never acquire a perfectly normal development of all their parts, which are sometimes supernumerary, but more frequently are deficient in number, and are almost invariably atrophied. This is strikingly illustrated in the development of the spines, with which the basal joint of the posterior legs of the *scolopendra* are armed. This fact is of consequence in a zoological point of

\* See Art. I, in our present Number.

view ; as these parts have recently been much depended on in the determination of species. It is also, perhaps, of some value in relation to the laws of development ; since it is found to be equally constant, as I shall presently show, in the reproduced parts of the true insecta." (Phil. Trans. 1844, p. 288.)

For his experiments on insects undergoing a complete metamorphosis, Mr. Newport selected the larvæ of the common nettle butterfly ; from a considerable number of which he excised one or more of the true legs, at no very long period before they had acquired their full growth. Some of the specimens seemed to be but little affected by the operation, as they immediately began to feed very actively, even when profuse hemorrhage was going on ; but on the following morning several of them had died from its results. It is interesting to remark that the hemorrhage of insects is restrained by coagulation of the circulating fluid, exactly as in higher animals ; and that the rapidity with which this coagulation takes place is dependent on the comparative temperature and dryness of the atmosphere,—the hemorrhage continuing longest in air that is loaded with moisture. Beneath the eschar thus formed, the complete union of the wounded parts subsequently takes place.

"It soon became evident that even in those instances in which the insects survived the operation, their development was considerably retarded by it. This was shown by comparing the length of time that elapsed in their different states, with that required by other specimens of the same age, which had not undergone any operation before they changed to chrysalids,—the circumstances, in regard to age, quantity and quality of food, temperature, and locality in which they were placed, being in all exactly the same. In every instance the uninjured specimens prepared themselves for transformation very much earlier than those experimented on ; and they also passed much quicker into the state of pupæ. Thus, while uninjured specimens, which had not cast their last larva skin, all underwent their changes on the 29th, and morning of the 30th of May, those of the same age that had been first subjected to experiment did not undergo a corresponding change of skin until late on the 31st. Precisely the same thing occurred with the more matured larvæ, all of which were retarded in their change to the pupa state beyond the time at which others of the same age had entered it." (Phil. Trans. 1844, p. 290.)

Some of the larvæ, when experimented on, had already entered their last skin ; and in these there was no opportunity of observing the progress of the reparative operation until the metamorphosis into the pupa state. Most of those which then remained alive gave distinct evidence that the process of regeneration was taking place ; the tibial and tarsal portions of the legs having been restored in some, and the entire limbs in others ; while in two or three instances the experiment appeared to have entirely failed. In the second set of larvæ, which had to undergo another moult before passing into the pupa state, indications were seen that the reparative process had commenced even then ; a slight enlargement being seen at the divided surface, and, in one instance, the leg which had been removed at the tibial joint being reproduced with the tarsus and claw. In butterflies produced from both sets of larvæ, the reproduction was complete in some cases, and less complete in others ; whilst in some specimens, produced from larvæ of both ages, there seemed to be no attempt at reproduction. In one of the specimens, from which two legs had been removed, the second leg was reproduced, whilst the third was not. This

fact, taken in connexion with the entire absence of reproduction in certain other cases, might appear to indicate that the reproduction of lost parts depends on the existence of special structures, situated in some portion of the base of the limb (as in crustacea); the removal of which prevents the redevelopment of the lost part. But such a conclusion would be inconsistent with other results of the same series of experiments; for even when the entire limb, with the coxa or basilar joint, was removed, a new limb was produced in some cases, the merest possible rudiment of a limb developed in others, whilst in others there was no indication of it whatever.

"When an entire limb is reproduced, it is always composed of its *essential* parts,—coxa, femur, tibia, tarsus, and claw. Besides being inferior in size, the tarsus is often deficient in the number of its joints; and the *subsidiary* parts of the limb, the articular spines, are almost always absent. This is more especially the case when a limb has been divided in the femoral or tibial joints; and the reproduction of the limb has, in consequence, been only partial. But in all these cases, the terminal part of the organ, the *claw*, is invariably reproduced. This was strikingly shown in some specimens of partial reproduction, in which the claw was formed at the extremity of a metatarsal joint, or when one or more of the tarsal joints were wanting." (Phil. Trans. 1844, p. 292.)

There is no reason to believe that the reproduction of lost parts ever takes place in myriapoda which have undergone their full development, or in insects which have passed through their metamorphoses. But we think that the negative requires to be proved; and we recommend the subject to Mr. Newport's attention. All the knowledge we at present possess on this subject would lead us to believe that the reproductive process, in the two classes just named, is confined to the time when the nutritive operations are actively going on, either for the development of new parts, or for the completion of the structures already in progress. There is reason to think that, in insects, the wings are not even supplied with blood, for any long period after the final change; so that a reparation would be there impossible. To what extent it may be carried in other parts would form an interesting subject of inquiry.

But we must now close our notice of these interesting Researches. We have entered more fully into the consideration of them, firstly, because of the very high value we attach to inquiries of this kind, when pursued with a philosophical spirit, as leading us to a knowledge of facts and principles of the greatest possible importance in connexion with those laws of life on which alone all sound practice of medicine and surgery is established; and next, because these researches of Mr. Newport have not hitherto received that attention, in this country, which we are confident they merit. This neglect may, in part, be attributed to the minuteness of the subjects of the inquiry, and also to the very little *practical* knowledge of the natural history of these subjects possessed by even our most distinguished medical men, who alone are fitted by education, in all other respects, for prosecuting and fully appreciating the value of such inquiries. It is the very minuteness of the subjects, however, which, while it increases a thousandfold the difficulties of investigating them, gives them,—especially in combination with their natural history,—much of their philosophical value. It is only in the minute forms of creation in which the



analogues of the complicated structures of our own bodies exist in their simplest condition, that we are enabled to learn, as it were, the alphabet of organized life; and where, by tracing the changes which these simple conditions undergo, in proceeding from the lowest to the highest forms, we are enabled with certainty to combine the hieroglyphical facts they afford into principles and laws demonstrative of one uniform and magnificent plan of creation; and thus ultimately come to read the most intricate problems of health and disease, which are the great object of all medical science.

We refer with pleasure to the Researches before us for some illustrations of our position:—to the elucidation we have now, for the first time, afforded to us, in Mr. Newport's investigations, of the mode in which the brain itself is formed in the early condition of the embryo in the articulates (and by inference also in the vertebrata) by the coalescence of the ganglia, or nervous centres, of a definite number of rudimentary segments that compose the head; to the demonstration of the plan on which the circulatory system is formed in the same class, and its conformity with that of vertebrata, in the existence of aortic arches, cephalic arteries, and descending aorta, as applicable to the abnormal surgical anatomy of the arteries in the vertebrata; and, lastly, to the facts connected with the reproduction of lost parts, which in like manner are applicable in principle to the healing of wounds and reparation of structures. We might mention many other good results that may be derived from minute anatomical investigations, combined with a practical knowledge of the natural history and habits of the objects themselves, by those who are otherwise fitted for such investigations. We trust that, in future, more attention will be devoted, in our medical schools, to those important branches of science—the anatomy and habits of the inferior animals; and that watching the vagaries of the summer fly, or feeding and rearing the caterpillar, or studying the habits of “the poor beetle that we tread upon,” may cease to be regarded as totally useless, or as too contemptible for a philosopher, because not immediately applicable to some practicable purpose.

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#### ART. XX.

*Transactions of the Provincial Medical and Surgical Association.*

Vol. XIII.—London, 1845. 8vo, pp. 418.

WE are glad to see that the council of the Association have changed their type. The volume will now contain nearly double the matter in the same space, and thus the cost of publication will in future be greatly lessened,—a consummation devoutly to be wished. The papers composing the present volume are unusually few in number, and some of them seem scarcely to come within the scope of Transactions published by a medical society. Indeed, we may say that, with the exception of the two excellent Anniversary Reports, the only thing in the volume,—strictly speaking,—that has a legitimate claim to be there, is the communication of Mr. Giles at the end, consisting literally of only two pages! The “Essay” of Mr. Crosse, however excellent in itself, as a “literary and practical” compendium of our knowledge respecting the subject of which it treats, has fewer preten-

sions to the character of originality than memoirs published as "Transactions" commonly possess. It is essentially a *book*, and ought decidedly to have been given to the world as such. It is much too good a monograph to be lost; and we doubt not its own merits and the high reputation of its author would have ensured for it a sale in the ordinary way of publication.

Dr. Hocken's elaborate essay on the Inflammatory affections of the Retina, seems to possess still fewer claims to the honour of the Association's *imprimatur*. It might have constituted a very tolerable chapter in his treatise of Diseases of the Eye, but how it came to find a place in the transactions of a Society, is not so obvious to our apprehension.

The volume, as usual, commences with the Retrospective Addresses delivered at the last anniversary meeting. These papers, from their nature, claim of right a place in the volume; and to this they are no less entitled by their intrinsic value.

I. *The Retrospective Address [on Practical Medicine].* By CHARLES COWAN, M.D., Physician to the Royal Berkshire Hospital, Reading. The Report of Dr. Bennett, published in our last Number, comprehending as it does the whole of the period included in Dr. Cowan's address, is so full on the subject of practical medicine that we cannot be expected to do more than to advert to Dr. Cowan's production. It is, however, but justice to the author to state that it is extremely creditable to him, and will stand comparison with any of its predecessors. It is not and does not pretend to be so comprehensive or complete as Dr. Bennett's Report, but it embodies a vast number of valuable facts, well arranged, and clearly described. In one of its most interesting parts,—the biographical section,—the Address has the advantage over our Report, the subject of biography not being comprehended in the scheme adopted in our Journal. We are of opinion that the future orators of the Association would do well to cultivate and extend this department of their subject, even to the exclusion of more practical matter. In an oral address, the details of experience in the various branches of medicine, however well stated, prove wearisome to the hearer, and often cannot be retained in the memory; while the interest attaching to the personal history and character of those who have trod the same path with ourselves, and have reached the goal we are all approaching, is deep and universal. Dr. Cowan's sketches are excellent as far as they go.

II. *Retrospect of Anatomy and Physiology for the year 1843-44.* By WILLIAM BUDD, M.D., Physician to St. Peter's Hospital, Bristol.

Of the subjects of Dr. William Budd's Report, a large proportion have been already noticed, under some form or other, in our own pages; and we shall therefore confine ourselves to a brief statement of its contents. After some general preliminary remarks, Dr. Budd proceeds at once to an enumeration of the principal discoveries in Organic Chemistry made during the preceding year; to which nearly half his Address is devoted. The principal experimenters whose results are introduced, are, of course, Liebig, Dumas, and Mulder; but a full account is also given of the researches of Blondlot, on the chemistry of digestion; of Dr. Percy on the elimination

of sugar through the kidney; of Schwann and Bouisson on the bile; together with a notice of Scharling's experiments on respiration. He then takes up Chossat's experimental inquiries on inanition; to the results of which his evident *penchant* for chemical analysis prevents him, we think, from doing full justice. He thinks that nothing has been ascertained by M. Chossat, which had not been clearly laid down in principle, and almost in so many words, in various chemical works, especially those of Dumas and Liebig; but we doubt if any one, however fully acquainted with the *theory*, would have anticipated the *fact*, that a bird dying of starvation would be completely resuscitated by a sufficient amount of heat. We cannot quite accord with Dr. Budd's opinion of the equal or even superior value of chemistry to anatomy, in the education of the physiologist; and we are rather disposed to think that he is one who expects too much from the former science. But we would in nowise seek to hold back any who are inclined to devote themselves to its extension; being satisfied that its real value in medicine will be ultimately far greater than that which we can at present or in immediate prospect attribute to it.

The summary of anatomical inquiries (which we should have expected to see holding the foremost rank) next follows; and here we meet with numerous names, among which those of Foville, Stilling, Bidder, Volkmann, and Newport are the chief. The valuable paper of the last-named author is not noticed by any means as fully as it appears to us to deserve,—its bearing on general questions of physiology being taken into account. A full analysis is given of Matteucci's experiments on animal electricity; and this derives an increased value from the interesting suggestions founded by Dr. Budd upon these researches, in regard to the mutual relations of electricity and nervous power. A notice of the complete identification, by Bischoff, Raciborski, and others, of the menstrual period in the human female with the rut in other animals, is the chief remaining feature in the address. We have only to say, in regard to its composition and execution, that, like Dr. Budd's former productions, it evinces not only industry in collecting facts, but that sagacity in valuing them, which is the characteristic of a philosophic mind; whilst the diction and style indicate the author's high literary cultivation. Well will it be for the Association, if its future Retrospective Addresses in this department, always come up to the standard which Dr. Budd has thus set.

III. *The Varieties, Causes, Pathology, and Treatment of the Inflammatory Affections of the Retina.* By E. O. HOCKEN, M.D. Deep-seated, internal inflammation of the eyeball, although it very often implicates both choroid and retina, may have its seat, sometimes more especially in the choroid (*choroiditis*),—sometimes more especially in the retina (*retinitis*). But authors appear to differ as to which case should be called choroiditis and which retinitis;—by some the choroid is considered the seat of the disease when the principal symptom is merely dimness of vision;—the retina, when to dimness of vision there is conjoined fiery spectra and intolerance of light;—by others, on the contrary, and we are disposed to agree with them, dimness of vision alone is viewed as the characteristic of retinitis; and fiery spectra and intolerance of light that of choroiditis.

This uncertainty depends on the absence, at first, of objective symptoms,—the sclerotic vascular injection around the cornea and other appearances being symptomatic merely of the anterior internal inflammation, iritis, &c.,—which almost always coexists, in a greater or less degree,—not of the deeper-seated inflammation.

The deep-seated internal inflammation of the eyeball to which Dr. Hocken refers in the paper before us, is that which is especially characterized by the symptoms of fiery spectra and intolerance of light. He commences at once to speak of it as retinitis without even defining what retinitis is—without inquiring what objective and subjective phenomena are peculiar to it, and what objective and subjective phenomena, which, although usually coexisting with it, are not peculiar to it, but to attendant inflammation of other parts of the eye.

Although Dr. H. speaks of changes which the retina undergoes from loss of transparency, effusion of lymph, displacement, &c., and which he says may be readily seen and appreciated during life by the practised and careful observer, almost as well as if exposed to the scalpel, he does not describe in detail these changes, as he might have done, if he had so readily seen and appreciated them, nor does he show their connexion with the subjective symptoms of the inflammation: and yet these are the very things which we want to know, and which alone could have given Dr. Hocken's paper any pretensions to novelty and interest, and entitled it to occupy so large a space in the Transactions of any Scientific Association.

IV. *An Essay, literary and practical, on Inversio Uteri.* By J. G. CROSSE, Senior Surgeon to the Norfolk and Norwich Hospital. This paper is incomplete; the causes, diagnosis, and treatment of *inversio uteri* being reserved as the subject of a second communication. When completed, we shall not fail to notice the whole essay. The part before us contains the facts on which,—as he informs us at p. 344,—he will, in his next paper, proceed to reason. The most valuable portion of the paper now published are the account of the chronic inversion of the uterus, and the history of those cases in which the unimpregnated uterus has been inverted by tumours, &c. The part of the essay which treats of inversion occurring during labour, or immediately afterwards, is less satisfactory; since the period of its occurrence, the frequency of hemorrhage, &c., and some other points connected with it,—which much need elucidation by a careful collation of the numerous cases on record,—are not noticed. We presume, however, from what the author says at p. 309, that he will enter fully into these inquiries in his next part. We have no doubt that this memoir, when finished, will be the most complete monograph on the subject in any language, and will amply sustain the author's high reputation for learning and professional skill.

V. *Case of Congenital Malformation of the Urinary Organs.* By HENRY GILES, Esq. As this is an interesting example of a curious class of cases, we give it entire. It is illustrated by a plate.

“Francis Hyde is now about 22 years of age, in good health, and capable of considerable exertion; he is small, but not ill-formed, with the exception of the parts to be noticed. A tumour presented itself at the lower part of the abdomen,

of a bright red appearance; this on examination is found to be the bladder, presenting its mucous surface without any covering or protection. It passes from its proper cavity beneath the symphysis pubis, and between the corpora cavernosa of the penis, previous to their union; after passing under the pubis it turns upwards and rather backwards, overlapping the symphysis and pressing against the centre of the lower part of the abdomen, which has become concave for its reception, giving the idea, at first sight, that it passed out above the symphysis. The protruded portion is generally about the size represented in the drawing [a walnut]; sometimes it is larger, at others smaller, contracting so much that it could be covered with a shilling, and appearing as though it were likely to be completely withdrawn. I formed an idea that this state was produced voluntarily, but found him incapable of exercising the least control over it. Externally and inferiorly, on both sides, the ureters open on the exposed surface, from which the urine is seen oozing, generally in drops; but if a little liquid be given him, it is thrown out in a small jet: this is also the case on his rising after lying down for a few minutes; very little forms during the night; it is at all times exceedingly acrid, and deposits large quantities of sand. Immediately under the protruded bladder, and to some extent supporting it, are the rudiments of a penis; it seems to be formed chiefly of the corpora cavernosa, united along their inferior and internal margins; superiorly they are turned outwards, and form a flat surface, on which, as before stated, the bladder rests: this is covered with a sort of fibrous membrane, which presents several openings of various sizes. There are no traces of either an urethra or glans penis. At the union of the corpora cavernosa anteriorly is placed a species of frenum. The scrotum is well formed, and the testicles are fully developed. He occasionally experiences strong venereal excitement; the penis at these times becomes somewhat distended and elongated; the seminal fluid oozes between it and the bladder. From constant efforts to protect the parts in walking, the inferior extremities have become bent outwards at the knee, making his gait extremely awkward." (pp. 351-2.)

#### ART. XXI.

*On Cataract, and its appropriate Treatment by the Operation adapted to each Case.* By CHARLES GARDINER GUTHRIE, Assistant-Surgeon to the Royal Westminster Ophthalmic Hospital.—London, 1845. 8vo, pp. 128.

WE have read this book with surprise and regret,—we might indeed say, with astonishment and sorrow. If, on being made acquainted with the circumstances which have excited these feelings, the profession should decide that they are reasonable and just, then, assuredly, has the ostensible author of this volume incurred a heavy responsibility towards the order to which he belongs, which it behoves him to lose no time in attempting to discharge. It will afford us very great pleasure to find that he is able to effect what is required of him, in a way that can be satisfactory to his brethren and himself. He may rest assured that this is no light matter; his own honour as well as the dignity of the medical profession alike demand vindication at his hands.

The title-page of Mr. Charles Guthrie's book we have transcribed above. The following is an equally correct transcript of the preface:

"The following observations contain the substance of that part of the Lectures on Surgery which have been for years delivered by Mr. Guthrie to the Medical Officers of the Public Service, and to the Students of the Westminster and the

Royal Westminster Ophthalmic Hospitals; as well as of those Clinical Lectures given by me at the Hospital during the last winter, which relate to the treatment of Cataract. I have endeavoured to be explicit in enumerating the symptoms and appearances of each kind, and in the directions explanatory of the different operations most appropriate for them; with the hope that they cannot be mistaken by professional readers, whilst they are as far as possible divested of unnecessary technicalities, that they may be readily understood by every intelligent person desirous of becoming acquainted with this interesting subject.

"19, *Savile Row*; May 20, 1845.

CHARLES GARDINER GUTHRIE."

Now, from this title-page and this preface, have we not a right to expect that the work to which they are prefixed, is the work of Mr. Charles Guthrie? Would it ever occur to any reader to think otherwise? The utmost that any one ignorant of the fact could expect from the statement, would be—that the author had availed himself of the *unpublished* lectures of Mr. Guthrie, senior, and only of the *substance* of these. He never would imagine, from the wording of this preface, that these lectures, which "have been for years delivered by Mr. Guthrie," had ever previously, even in *substance*, been communicated to the members of the profession generally. He would also, of course, conclude that the *substance* of "the clinical lectures given at the hospital during the last winter" by Mr. Charles Guthrie, would truly have some *substance* of their own, to justify their being placed in the same category and on the same level as those "delivered to the medical officers of the public service,"—by his father. Finally, seeing only in the expressions "*I have endeavoured to be explicit*," &c. . . . "*with the hope*," &c. the simple and natural avowal of the responsibility attaching to original authorship, he would necessarily infer that whatever assistance Mr. Charles Guthrie might derive from the facts and doctrines supplied by others, the working-up of the materials was at least his own act, and, *a fortiori*, the statements, opinions, judgments, directions, reflections contained in the book, and enunciated, as it were, through his own lips, by his own pen, and authenticated by the unequivocal evidence of the personal pronoun *I*,—were, at least, his own statements, opinions, judgments, directions, reflections. To imagine otherwise, would seem not merely absurd, but would be at once felt to be incredible—yea impossible!

And yet what is the fact? Charles Gardiner Guthrie is just as much the author of this book as the Editor of this Journal is the author of all the articles contained in its Forty Numbers! Nay, not so much; for there is no single article—no single page, we were going to say, certainly no three consecutive pages in the book,—nay not ten pages of the whole hundred and twenty-seven, written at all by him, its ostensible author! This is most strange—yet it is true: "Truth is stranger than fiction."

Most of our older readers are aware that Mr. G. J. Guthrie, the father of Mr. Charles Guthrie, published an excellent work on diseases of the eye, in the year 1823, entitled 'Lectures on the Operative Surgery of the Eye; or an historical and critical inquiry into the methods recommended for the cure of Cataract,' &c. It was reprinted in 1827; and this, the second edition, is the one now before us. In the year 1836 Mr. Guthrie also published a small pamphlet of fifty pages, 'On the Certainty and Safety

with which the operation for extraction of a Cataract from the Human Eye may be performed, and on the means by which it is to be accomplished.' It is out of these two BOOKS—books in the hands of all old surgeons,—and out of no private and peculiar store of paternal manuscripts, that Mr. Charles Guthrie has framed his volume! The preface tells us nothing of the pamphlet, though the *substance* of this is also "contained" in it. And well and truly may Mr. Charles Guthrie assure us that his book "contains," the substance of his father's "Lectures,"—since it is framed from them, precisely on the same plan and pattern as young Paddy frames his jacket by hacking off all superfluity of tail and sleeve from the paternal long-coat; or as his honest sire frames his pavement in Piccadilly or Pall Mall, by restoring to their resting-place anew, the very identical blocks which he had displaced the day before. Like Paddy's blocks of granite, the contents of Mr. Guthrie's books are transferred, *en masse*, to the pages of his son's. Sometimes, indeed, they may receive a little chipping, here and there, to make them fit; or a little original rubbish may be thrown in to fill up unseemly vacancies; and a piece may be occasionally turned topsy-turvy or athwart, or shifted from its original locality; still all must admit, that everything has been handled with the most filial reverence, and that the author and the paviour have been alike successful in achieving that most difficult of mortal tasks, a real practical bull—a *thing another yet the same*.

Of Mr. Charles Guthrie's volume the first sixty pages are taken from the 'Operative Surgery;' the next twenty-four from the 'Certainty and Safety' pamphlet; and the rest of the volume from p. 84 to *Finis*, again from the 'Operative Surgery:'—always allowance being made for the chip-pings and the rubbish aforesaid.

Were the subject not, in reality, a very serious and melancholy one, a comical exhibition might be made by placing in juxta-position all the statements, and directions, and reflections of Mr. Guthrie and Mr. Charles Guthrie. In contemplating them together, sober common-places become irresistibly ludicrous from mere identity; unanimity of sentiment makes one laugh by its very perfection.

"The pressure of the forefinger tends to fix the eye at the same time, and to render it as immoveable as possible, and this mode of proceeding," says MR. GUTHRIE, "I generally adopt in preference for the left eye." (*On the Certainty*, &c. p. 10.)

"The pressure of the forefinger tends, &c. . . . and this mode of proceeding," says MR. CHARLES GUTHRIE, "I generally adopt in preference for the left eye." (*On Cataract*, p. 64.)

"Where persons are naturally irritable or nervous," says MR. GUTHRIE, "I always separate the lids, and fix the eye two or three times at an interval of two or three days." (*On the Certainty*, &c. p. 14.)

"Where persons are naturally irritable or nervous," says MR. CHARLES GUTHRIE, "I always separate the lids," &c. (*On Cataract*, p. 66.)

"This is the acme of perfection in operating," says MR. GUTHRIE; "I am aware that it cannot always be done." (*On the Certainty*, &c. p. 20.)

"This is the acme of perfection in operating," says MR. CHARLES GUTHRIE; "I am aware it cannot always be done." (*On Cataract*, p. 70.)

"In very nervous or agitated persons," says MR. GUTHRIE, "I always leave," &c. (*On the Certainty*, &c. p. 26.)

"In very nervous or agitated persons," says MR. CHARLES GUTHRIE, "I always leave," &c. (*On Cataract*, p. 74.)

"I have seen cases," says MR. GUTHRIE, "in which little or scarcely any deviation from the proper situation of the pupil has taken place," &c. (*On the Certainty*, &c. p. 35.)

"I have seen cases," says MR. CHARLES GUTHRIE, "in which little or scarcely any deviation from the proper situation of the pupil has taken place," &c. (*On Cataract*, p. 78.)

"From a due consideration of these two circumstances, with the almost impossibility of avoiding them both, I have no hesitation," says MR. GUTHRIE, "in condemning this method," &c. (*Operative Surgery*, p. 294.)

"From a due consideration of these two circumstances, with the almost impossibility of avoiding them both, I have no hesitation," says MR. CHARLES GUTHRIE, "in condemning this method," &c. (*On Cataract*, p. 89.)

"New feelings will arise," piously exclaims MR. GUTHRIE, "in admiration of the benignity of the Creator," &c. (*On the Certainty*, &c. p. 66.)

"New feelings will arise," piously exclaims MR. CHARLES GUTHRIE; "in admiration of the benignity of the Creator," &c. (*On Cataract*, p. 13.)

"But he is not the person in error," says MR. GUTHRIE; "it is those who wrote the directions. I do not mean to say," adds MR. GUTHRIE, "that these gentlemen have willingly deceived the public, but I do say it is my opinion, that they have told only half the truth." (*On the Certainty*, &c. p. 22.)

"He is not, however, the person in error," says MR. CHARLES GUTHRIE; "it is those who wrote the directions. I do not mean," adds MR. CHARLES GUTHRIE, "that these gentlemen have willingly deceived the public, but it is my opinion they have told only half the truth." (*On Cataract*, p. 72.)

And so Mr. Guthrie and Mr. Charles Guthrie proceed from beginning to end,—identical in word, opinion, judgment, sentiment; exhibiting such an instance of paternal and filial union and unanimity as, we will venture to say, was never before presented, in history or fiction, in prose or rhyme, since the world began.

Nor is this identification even confined to words; the very pictures are the same. In pages 22-24 of Mr. Charles Guthrie's book, we have three diagrams, and a letter from Capt. Kater. In Mr. Guthrie's pamphlet, (pp. 45-7,) we have the same letter and the same three diagrams! To be sure, Mr. Charles Guthrie has turned the diagrams topsy-turvy; and he gives the observations as Capt. Kater's, and as "addressed to Mr. Guthrie in the year 1834;" but he leaves the reader to imagine (if he pleases,) how this letter "of the late Capt. Kater" and its woodcuts, got into his hands; not a word is said of the pamphlet, and nobody but such old readers as ourselves would ever dream of the letter having been published before. And we may as well remark here, that from the beginning of Mr. Charles Guthrie's book to the end, his father's writings are never once quoted, never once referred to! Every now and then, indeed, "MR. GUTHRIE" is mentioned by name as having seen or done so and so, when the employment of the personal pronoun of the original, would "be coming it rather too strong," even for Mr. Charles Guthrie. For example, "Mr. Guthrie"



says Mr. Charles Guthrie, (p. 61,) "took some pains to correct this little irregularity. . . . This trifle constitutes one of the greatest improvements, &c." "I have taken some pains" says Mr. Guthrie, (Pamphlet, p. 29,) to correct this little irregularity. . . . This trifle constitutes one of the greatest improvements," &c.

Again, at the end of Mr. Charles Guthrie's book, there is a grand display of staring eyes, nine in number, in a copper-plate, with a page of explanation, and references to the pages of his book the statements in which they are intended to illustrate. On turning to Mr. Guthrie's 'Operative Surgery,' we were stared into a state of almost mesmeric fascination, by the same nine horrid eyes, each in the same identical spot as in Mr. Charles's book, and all goggling at us with the same genuine ophthalmological ghastliness! And is the plate really the same? Oh no! not the same; but it is one more brilliant example of the practical bull—*it is another yet the same*. The nine eyes to be sure are there; the place, the shape, the size, the number of each—all are identical;—but, then—ay then—*the colour of the irides is different—and the imprint,*—"Engraved by I. Stewart,—Published May 1827, by Burgess and Hill," *is not there*. How then can it be the same plate?

But we must resume the tone that best becomes the subject, and here close our painful task;—a task which nothing but the strongest sense of duty, imposed upon us by the responsibilities of the position which we occupy, could have ever led us to undertake. It seems probable that such a thing as we have been called upon to expose, was never done before; we hope, for the sake of our profession, it will never be done again in medical literature; we cannot imagine why it has been done now; and, although we see that it is done, we know neither the history nor the mystery of its doing. One thing is clear, however, that the profession will expect some further explanation of the circumstance; and that this explanation must extend to both the real and ostensible author of the volume before us. Either the two Messrs. Guthrie, father and son, were mutually cognisant and participant of the fact and act; or the son has been injuring the father without his knowledge. If Mr. Guthrie, senior, was a knowing and a consenting party, on what principle, we ask, can he justify the re-issue of a portion of his own writings under the name of another, though that other be his son? Or on what principle can Mr. Charles Guthrie, even with his father's consent, avow himself the author of the works of another, though that other be his father? On the other hand, if all has been done, without Mr. Guthrie's knowledge, then we must regard Mr. Charles Guthrie as doubly responsible—in thus deepening, as he does, the sin of a most monstrous plagiarism, by committing the robbery on one whose literary property and fame he, above all others, was bound to respect and defend.

## PART SECOND

## Bibliographical Notices.

ART. I.—1. *On Asthenopia, or Weaksightedness.* By WM. MACKENZIE, M.D. Surgeon Oculist in Scotland in Ordinary to her Majesty, &c. (*From the Edinburgh Medical and Surgical Journal*, No. 156.)—Edinb. 1843. 8vo, pp. 34.

2. *On the Vision of Objects on and in the Eye.* By WM. MACKENZIE, M.D. &c. (*From the Edinburgh Medical and Surgical Journal*, No. 164.)—Edinburgh, 1845. 8vo, pp. 62.

By investigating the subjects of weaksightedness and *muscæ volitantes* in the elaborately systematic and scientific manner he has done in these papers, Dr. Mackenzie has imparted clearness and precision to what was before sufficiently puzzling and unsatisfactory, and has thus conferred a service on ophthalmic medicine. We shall here content ourselves by giving a brief outline of the facts and doctrines established by the author, referring the reader for further information to the original papers.

**ASTHENOPIA.** The specific character of the weaksightedness which Dr. Mackenzie here considers, and to which he gives the name of *Asthenopia*, (from a privative, *σθένος* strength, and *ὤψ* the eye,) is this: The eyes are unable to sustain any continued exercise upon near objects; although the patient on first viewing them generally sees them distinctly, although he can employ his sight for any length of time in viewing distant objects, and although the eyes appear sound.

There is an incapacity to continue to converge the axis of the eyes on near objects, and for the pupil to continue contracted.

The diseases with which *asthenopia* is most apt to be confounded are photophobia, incipient myopia, presbyopia, night-blindness, and amblyopia or incomplete amaurosis. *Asthenopia* may also be complicated with other affections of vision—among others with *muscæ volitantes*.

The patients affected with *asthenopia* are generally delicate, but the complaint does not appear to be particularly connected with any disorder of the digestive organs, nor in females with disturbed menstruation. It commences in childhood or youth, and may continue throughout life. It is seldom met with originating in the middle period of life.

*Asthenopia* Dr. Mackenzie considers to be an affection of the apparatus by which the eye is adjusted for vision of near objects with some degree of affection of the retina.

The remote causes of *asthenopia* are very various: over-exertion of the sight, previous inflammation, especially scrofulous, of the eye, injuries of the fifth pair, affections of the encephalon, loss of the fluids of the body, &c. are enumerated. Though *asthenopia* does not run into *amaurosis*, it

in general remains habitual, little or not at all influenced radically by treatment. It may, however, be palliated by resting the eyes at intervals, by the use of convex glasses; and when the patient's employment is one requiring much use of the eyes, he must change it for one of an opposite kind. "Many a poor man," says Dr. Mackenzie, "have I told to give up his sedentary trade and drive a horse and cart; while to those in better circumstances and not far advanced in life, I have recommended emigration, telling them that though they never could employ their eyes advantageously in reading and writing, they might see sufficiently to follow the pastoral pursuits of an Australian colonist."

**MUSCÆ VOLITANTES.** The appearances seen before the eyes, known under the name of *muscæ*, are of two principal kinds, such as have both apparent and real motion, and such as have apparent motion only—motion depending on that of the eye itself. These two kinds of *muscæ* are distinguished by the names of *floating* and *fixed*, and are quite different in their nature.

**Floating muscæ.** These are the most common kinds of *muscæ*. Overlooking the real motion which these *muscæ* present, some have viewed them as subjective sensations, depending on some intrinsic change of state of the optic nervous apparatus. That they are truly objective sensations, however,—occasioned by the presence of particles in the interior of the eye indeed, but extrinsic of and in front of the retina,—admits of mathematical demonstration. But more than this: the particles appear to be of normal occurrence in the eye, for the appearance of floating *muscæ* may in general be seen by any person, by simply looking through a small aperture in a card at the clear sky, or through the eyeglass of a compound microscope at the flame of a candle two or three feet distant.

On contemplating the spectra thus brought into view, viz. the beaded filaments, the distinctly and indistinctly-defined globules, and the watery-like filaments—called by Dr. Mackenzie, respectively, the *pearly spectrum*, the *distinct insulo-globular spectrum*, the *indistinct insulo-globular spectrum*, and the *watery spectrum*—it is observed that they are situated in different planes one behind the other, "that they never mingle with one another so as to change the order in which they stand before the eye, but the pearly spectrum always appears the nearest, then the sharply-defined insulo-globular, then the obscurely-defined globules, and farthest away the watery threads.

**Seat of the particles, the presence of which occasions floating muscæ.** A spectrum, like opaque spots, surrounded by a halo, which occasionally seem to run together into dots, which again divide and disappear, and which ascend after every nictitation, which is sometimes seen and which appears to be produced by the layer of mucus and tears on the cornea—called therefore by Dr. Mackenzie, *mucolachrymal muscæ*—has been confounded with floating *muscæ*, and the latter attributed to the same cause. That the particles which occasion floating *muscæ*, however, are situated in or behind the vitreous body, but in front of the retina, admits of being mathematically demonstrated, as also that they occupy different situations—those producing the pearly spectrum being the nearest to the retina, those producing the watery spectrum the farthest from the retina, the insulo-globular, intermediate.

As to the nature of the particles : this admits of less satisfactory determination than their existence and seat.

The action on the light by the particles, whatever they may be, which cause muscæ, appears to be diffraction or inflexion.

Though floating muscæ thus depend on a cause extrinsic to the retina, their being ordinarily seen is owing to a morbid and excitable state of the retina,—a state, however, which has no necessary tendency to run into amaurosis.

*Fixed muscæ.* These appearances, which are in their nature amaurotic symptoms, never change their position either in regard to each other or to the optic axis. They have thus no real motion, but merely apparent motion depending on the motions of the eyeball. It often, however, requires some attention and power of observation on the part of the patient, to distinguish real from apparent motion.

Fixed muscæ vary in number, size, and form. At first semi-transparent, they afterwards become black or at least dark. They appear like blotches when the patient looks at a sheet of white paper. Fixed muscæ are owing to spots of the retina becoming insensible. The insensible spots are apt to increase in size gradually until the whole retina is overspread with insensibility—is amaurotic.

Examples of temporary fixed spectra depending on natural states of the eye are the vascular spectrum in Purkinje's experiment, and the phenomena of accidental colours and ocular spectra.

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ART. II.—*Human Health ; or the Influence of Atmosphere and Locality ; Change of Air and Climate ; Seasons ; Food ; Clothing ; Bathing and Mineral Springs ; Exercise ; Sleep ; Corporeal and Intellectual Pursuits, &c. on Healthy Man, constituting Elements of Hygiene.* By ROBLEY DUNGLISON, M.D. &c.—Philadelphia, 1844. 8vo, pp. 464.

THERE is nothing in this work calling for lengthened notice, but in saying so, we are far indeed from intending to convey a mean opinion of it. There is nothing essentially novel in the plan or materials of the work. In its general features, arrangement and execution, it resembles treatises on the same subject already before the public. We therefore do not consider it necessary, as we have just observed, to analyse it in detail. But we can safely recommend it as a volume comprising a great deal of useful and entertaining information, though this consists principally of compilation not of original research. The portion of the work allotted to the consideration of "food," and which occupies nearly a third of the volume, if it does not contain much scientific investigation, method, or remark, exhibits a good deal of practical observation, and being popular in its language and explanations, might form part in a system of *domestic medicine*, superior to any at present before the public. The work, in fact, is quite as well adapted for the general as for the professional reader ; nay, we should say, that with more than usual felicity, it is fitted for both classes of readers ; it is a treatise, which the scientific man and the physician will read without contempt ; the ordinary reader, without difficulty and with equal pleasure and improvement.

ART. III.—*Mental Maladies ; a Treatise on Insanity*. By E. ESQUIROL. Translated from the French, with Additions, by E. K. HUNT, M.D.—Philadelphia, 1845. 8vo, pp. 496.

M. ESQUIROL's treatise has been so long acknowledged as a standard work on insanity, that it is surprising it has never been translated before. We think, therefore, that the readers and speakers of the English language, on both sides the Atlantic, are much obliged to Dr. Hunt for the trouble he has taken to accommodate such of them as do not understand the original, with the present version of it. "All that portion of the treatise, relating properly to insanity, has been published [in the translation] entire; the remainder, referring, for the most part, to the statistics and hygiene of establishments for the insane, together with the medico-legal relations of the subject, have been omitted." The translator has introduced here and there, a little original matter, relating chiefly to the opinions and practice adopted in the United States. So far, we can recommend the work to our readers. We are sorry, however, to be obliged to add that as a literary composition, it is extremely defective,—bad as a translation, worse as an English book; and consequently discreditable to Dr. Hunt, both as a French and English scholar. And we are sorry to say that many of the American translators which we have seen of late, are obnoxious to the same charge. We tell our good friends on the other side of the Atlantic, to look to this betimes; if they are not more careful about their style of writing, they will, in the end, come to differ as much from their forefathers in language, as they do in civil polity; and this, we presume, they have no ambition to do.

We put down, at random, a few samples of Dr. Hunt's manifold delinquencies:—

"Unsuitable marriages; those contracted [by *parents*]; and above all those, &c." (p. 42.)

"The same may be said of the great lords of France who were almost all of them *parents*, &c.," (p. 49),—meaning relatives or relations.

"He *pretends* to be blindly obeyed," (p. 74),—meaning *insists* on being blindly obeyed.

"Jesus Christ has a *fine figure*," (p. 100),—meaning a *beautiful face*.

"His teeth were *poor*," (p. 114.)

"Render a *well* person epileptic," (p. 168.)

"Engages in the *exercise of the chase*," (p. 176),—meaning *goes out shooting*.

"Since *the turns* have been abundant," (p. 192),—meaning *menstruation*.

"She finds herself feeling unwell," (p. 263),—elle se trouve mal.

"Falls a victim to a *reflected resolution*," (p. 274.)

"G., a *proprietary*, leaves seven children," (p. 277.)

"Lively moral affections," (p. 470),—meaning just the opposite.

He talks of the *savage* of Avignon,—instead of the *wild man*,—indeed always translates "*sauvage*" *savage*, where it means *wild*. (p. 486.) *Cannot*, he invariably makes "knows not how to," &c. *Huit jours* and *quinze jours*, he renders "eight days" and "fifteen days," instead of *week* and *fortnight*.—Talks of "provoking" the bowels.—Speaks of a *falling out* with her companion, and being *at one again*.—Translates always "*embrasser*" *embrace*, instead of *kiss*.

ART. IV.—*Surgical and Practical Observations on the Diseases of the Human Foot, with Instructions for their Treatment. To which is added Advice on the Management of the Hand.* By JOHN EISENBERG.—London, 1845. 4to, pp. 252.

THIS is the most splendidly got-up book that has come under our notice since we commenced our career. It is a real luxury to sexagenarian eyes to look on its silk-soft, silk-white paper, its beautiful black, tall type, its gorgeous promenades of margin, twice the extent of the parterre of text. But, alas, it is all fairy ware—fine semblance, no substance; and we warn our readers all and sundry against meddling with the charming cheat. It is a puff in quarto, an advertisement of 250 pages, all to the honour and glory of John Eisenberg. It surely missed its way when it fell into ours. It may satisfy or mystify the learned lords and ladies who read Dr. Cronin and Dr. Riadore—but it has nothing in common with the principles or objects of ‘The British and Foreign Medical Review.’ Does the author speak the truth in stating in his dedication to Dr. Marshall Hall, that he, Dr. Hall, had “accepted” the dedication, and “considered” the author’s “labours” as “not unworthy of his kind protection?” We hope for the sake of Dr. Hall, that this, like much of the book, is a fib.

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ART. V.—*A Practical Treatise on the Special Diseases of the Skin.* By C. M. GIBERT, Physician to the Hôpital St. Louis, &c. Translated from the French by EDGAR SHEPPARD.—London, 1845. 8vo, pp. 362.

THE work of Gibert on the diseases of the skin differs from all other treatises on the same subject, with the exception of Plumbe’s, in being confined to the consideration of the special and more common cutaneous affections which fall under the daily observation of every practitioner. No mention is made in it of the contagious exanthemata, of the varioloid diseases, of those that are peculiar to other countries, that are very rare in the west of Europe, or about which much doubt and uncertainty prevail.

The original of the volume before us has been long known to all dermatologists as a sufficiently practical and useful work on the subject of which it treats. Its distinguishing feature consists in the fulness of its therapeutic details. Indeed, these are at times too copious; the author being apt to confuse his readers with particulars about the preparation of decoctions, ointments, &c., that would have been more in place in an appendix than in the body of the book.

Allowing all praise, however, to Gibert’s work, the expediency of translating it may, we think, very fairly be questioned. As a practical treatise, it is most decidedly not equal to the work of Messrs. Cazenave and Schedel, lately translated by Dr. Burgess, to which it is very much inferior in style and arrangement, and in the amount of information given on several very important subjects, as, for instance, the syphilitic diseases of the skin and lupus. As a work of learning and research, it falls short of Willan’s treatise, and of Bateman’s synopsis; and in neither respect is it at all equal to the classical treatise by Rayer, which was a few years since put into an

English garb by Dr. Willis. The expediency of undertaking the translation, however, is perhaps rather a question between Mr. Sheppard and his publisher, than between him and us; the manner and style in which it has been executed concern us more nearly; and in this respect Mr. Sheppard has done but scanty justice to his original, and but little credit to himself. Indeed, he appears to have had some misgivings on this point, for he apologises in the preface for the want of elegance and the literal character of his version, and for his not having rendered it more free from gallicisms. With these, indeed, every page of the book abounds: thus we find Plato, Prosper Alpinus, and the *Ephemerides Germanicæ*, Frenchified into *Platon*, *Prosper Alpin*, the *Ephemerides Germaniques*; and such expressions as the following meet the eye at every turn: "The frequency of erections reacting *sur le moral*." "A profound alteration of the blood and lymph;" "the evil apparent is always indicative;" "a veritable fluxion;" "this often so fatal disease;" "the breath of life which yet animated him was snapped." Passages of this description we might multiply to an endless extent; we have, however, given enough to justify our criticism.

Occasionally Mr. Sheppard fails in conveying the author's meaning, or at all events, makes it somewhat difficult for the reader to guess. Thus, for instance, at p. 97, we find the following sentence: "Sanguineous and lymphatic subjects are most affected with it (scabies), but we must observe that in France this is the most general temperament, and that it would be unfair uniformly to attribute this fact to a greater natural predisposition to contagious diseases, and to a more active absorption really existing in this species of temperament." In this passage "*this fact*" refers to the sanguineous and lymphatic temperaments being the most common in France, and not, as the author intends it, to persons of those temperaments being the most readily affected with scabies. Again at p. 356, we find the following very obscure and ungrammatical sentence: "Syphilis in the new-born infant is always a severe malady; it frequently falls a victim to it in a few weeks; nevertheless if it is well constituted," &c.—leaving us in doubt whether syphilis falls a victim to the infant, or the infant to the disease.

Should a second edition of this work ever be called for,—which in the present overstocked state of the literature of the diseases of the skin we much doubt,—we trust that Mr. Sheppard will take the trouble carefully to revise the style of his translation, the character of which, materially lessens the value of a sufficiently useful manual;—rendering it very doubtful, to use his own poetical expression, whether it "will live as long, bearing the union jack of England, as the tricoloured flag of France."

We have been the more desirous of calling attention to the very imperfect style of this volume, because having criticised somewhat severely in other pages of our present Number, some American translations of French works, we wish to prove to our transatlantic friends, that our justice is even-handed and without respect of kin or country. *Tros Tyriusve*, has ever been the motto of our Journal.

ART. VI.—*Remarks upon the Mortality of Exeter ; together with Suggestions towards the improvement of the Public Health. Being a Letter addressed to Henry Hooper, Esq. the right Worshipful the Mayor of Exeter.* By THOMAS SHAPTER, M.D. &c.—London, 1844.

THIS is one of the many useful publications to which the recent sanitary "agitation" has given birth. The author is already favorably known to the public by his work on the 'Climate of the South of Devon,' and the present essay cannot fail of adding to his reputation for science and humanity.

After presenting us with a short sketch of the mortality of Exeter, as compared with that of the country at large, of the surrounding rural districts, and of the large towns of England, he arrives at the conclusion, "that Exeter is not liable to a higher rate of mortality than is generally incident to favorably situated towns." It seems, indeed to occupy a sort of intermediate place between the two extremes of high and low mortality, but inclining toward the more favorable limit. Our author next glances at the views recently propounded by Mr. Neison, and presents us with tables of the ages of the living. He concluded this part of his essay by the following summary: 1. That Exeter, in common with other large cities, is liable to a greater amount of mortality than rural populations. 2. That the mortality of Exeter is very much in excess of that of the surrounding country. 3. That the average mortality of Exeter is less than that of the principal cities of England. 4. That there are but few cities of a similar amount of population, in which a lower rate of mortality prevails.

Dr. Shapter, however, is not satisfied with the comparatively favorable statement contained in the last proposition; but goes on to inquire—Has this city the amount of health and vitality which it ought to enjoy? This question receives the same answer which has been already given to the same question by all the large towns in England, nay, by every city in the world. Before entering into details with regard to the sanitary condition of Exeter, Dr. Shapter shows that its excess of mortality is not due to its situation:

"It must be recollected," he says, "that Devonshire, of which it is the chief city, is amongst the healthiest counties in the kingdom; that the district by which it is immediately surrounded, enjoys an average mortality less than that of any of the other districts of England, which the Registrar-general has selected for his Quarterly Reports; that the city is well placed as far as general position is concerned, situated on the ridges and crowning heights of elevated though sheltered ground; that it is built, for the most part, on a sandy soil, so that ventilation and drainage are not difficult; that the local provisions for drainage are extensive and well carried out; that the supply of water, whether natural or artificial, is ample; that a large and rapid river flows immediately beneath it; that the climate is mild and equable, neither over hot in summer, nor cold in winter; that the houses are not prominently ill constructed; that it contains within itself no destructive manufactures, nor deleterious employments; that it is, moreover, subject to no endemic disease, no ague, no particular fever; and that the medical relief for the poor is most ample. In fact, there is not, I believe, amongst the whole 115 districts of the Report, any one which presents so good an example of a town population uninfluenced by foreign causes, as does this city."



And yet Exeter can claim no exception from the common causes of disease and premature death which lurk within doors, in certain parts, at least, of all towns. In Exeter, as in London or Liverpool, we have examples of "families consisting of eight, ten, or more persons, having but the limited accommodation of a single room, ranging from ten to fourteen feet square, by nine feet high, in which they sleep by night, huddled together on beds and on the floor, and live by day, doing all the household work necessary for so large a number;"—of dame's schools held in rooms usually in crowded and bad situations, small, and inhabited by the mistress day and night, with the addition of a fire, winter and summer, for culinary purposes;—(in an atmosphere thus artificially heated, are congregated together for hours in the day, perhaps twenty children: the closeness and unpleasantness of these rooms is scarcely credible—they may really be termed modified "*black holes*;" )—of pig-styes, and slaughter-houses, and crowded grave-yards;—of houses placed back to back, or with windows opening only on one side;—of inadequate provision of privies, of imperfect communication with the main sewers, and of other defects in the construction of their most important under-ground channels, &c. &c.

These defective sanitary arrangements are followed by their usual consequences, impaired health, and increased mortality. But we are informed that things are fast improving, that the sewerage is being attended to, the streets are being widened, and ample supply of pure water at a reasonable rate has been brought into the town.

Dr. Shapter concludes his essay by some simple recommendations which naturally spring out of the foregoing statements. He suggests "that as far as possible, blind alleys and small courts should be abolished; that slaughter-houses, and the keeping of animals should be prevented; that the streets should be opened, to admit the free passage of air; that the houses should be constructed with a view to perfect ventilation, adequately supplied with water and with sinks, &c., for necessary purposes; that the drains communicating with the sewers, as well as the sewers themselves, should be well constructed; that the embouchures of the latter should empty themselves below the level of the water, &c.; . . . that holiday-ground should be provided for the poor and their children; that tepid and warm baths should be supplied at a moderate cost; and that for the richer citizens, detached houses should be built on healthy spots, at the distance of three or four miles from the city."

It was not to be expected that Dr. Shapter should discover any new remedy for the physical evils which he has pointed out. All these local reports must necessarily present much sameness. The story is getting an old and familiar one, but it must be told over and over again, till all men become familiar with it, and receive it as admitted truth. Though Dr. Shapter aims chiefly at the improvement of his own city, we have no doubt that his labours will be appreciated beyond its limits.

## PART THIRD.

## Original Reports and Memoirs.

REPORT ON THE PROGRESS OF PRACTICAL MEDICINE,  
IN THE DEPARTMENTS OF  
MIDWIFERY AND THE DISEASES OF WOMEN AND CHILDREN,  
*During the Years 1844-5.*

BY CHARLES WEST, M.D.,

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Physician to the Royal Infirmary for Children, and Physician-Accoucheur to the Finsbury Dispensary.

THE period included in this Report extends from the 1st day of January 1844, to the last of June 1845; and its plan and general character are the same as those of the last Report.

## I. ON THE PROGRESS OF MIDWIFERY.

New editions have appeared of the manuals of Dr. Ramsbotham,\* and M. Chailly,† and a translation of the latter work by Dr. G. S. Bedford, of New York, has been published in America. The value of Dr. Ramsbotham's work has been increased by the addition of an essay on the diseases of the pregnant and puerperal states, and on abortion. M. Chailly's treatise has likewise undergone some enlargement; and a good alphabetical index has been added, which was a desideratum in the former edition. The American translation contains some judicious notes and additions by Dr. Bedford. The work of M. Moreau has likewise appeared in an English dress, edited by Dr. Goddard, of Philadelphia. Professor Trefurt‡ of Göttingen has published a volume of essays and observations on subjects connected with practical midwifery and the diseases of women, which shows much learning and practical knowledge. Some of the subjects of which the writer treats will be noticed in the course of the Report.

## PREGNANCY.

*Signs of pregnancy.* Observations have been made by MM. Müller§ and Kleybolte|| on the value of kysteine in the urine as a sign of pregnancy. The former gentleman does not attach much importance to it, since he found a very thin pellicle of it in the urine of two women who were not pregnant. In another case in which a woman was pregnant no kysteine was formed in the urine, while the person was suffering from a cold which was attended with a

\* Principles and Practice of Obstetric Medicine and Surgery, 2d edition; London, 1844, 8vo.

† *Traité Pratique de l'Art des Accouchemens*, 2ième ed. 8vo; Paris, 1845.

‡ *Abhandlungen und Erfahrungen aus dem Gebiete der Geburtshülfe*, etc. 8vo; Göttingen, 1844.

§ *Casper's Wochenschr.* Jan. 11-18, 1845.

|| *Ibid.* April 26, 1845.

And yet Exeter can claim no exception on the urine again becoming ease and premature death which pregnant women M. Kleybolte arrives at least, of all towns. In Exeter, of kysteine as a sign of pregnancy; amples of "families consisting of other persons, and is therefore unable the limited accommodation of independent of the existence of pregnancy square, by nine feet together on beds and on work necessary for usually in crowded tress day and night culinary purp gated together ness and really be houses with priv fe

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*disorders of pregnancy.* M. Chaillay† relates the particulars of three cases of vomiting during pregnancy, which proved fatal by its severity. In the first case the patient died in the 14th week of utero-gestation; and vomiting unattended by fever had existed for three months. There was no lesion of the stomach, but "evident inflammation" of the decidua. In the second case, death took place at the same period, and obstinate vomiting had existed from the very beginning of pregnancy. Very slight lesions were found in the stomach, but there was sanguineous engorgement of the decidua and of the uterine tissue, with softening and thickening of the uterine parietes. In the third case death took place at 4½ months, the patient being then in a state of complete marasmus, from vomiting which had existed for two months.

*Abortion.* Dr. Bond‡ recommends the employment of a pair of forceps which he has invented to remove the placenta in those cases of abortion in which its retention occurs. His forceps are ten inches long, and resemble a pair of bullet forceps, much curved, and with very long blades.

[The employment of mechanical means for removing the placenta in these cases is not new; and is generally discountenanced by those who have had the largest experience, on account of the impossibility of guiding any instrument introduced into the uterus during the early months of pregnancy.]

*Rupture of the uterus.* Dr. Prægl§ relates the case of a woman who became pregnant after having undergone the Cæsarean section. At the 4th month of her second pregnancy a small ulcer formed on the right side of the abdomen, and gradually increased to the size of the hand. Near the end of pregnancy, but before labour had commenced, the uterus and abdominal integuments gave way in this situation, and the foetus with its membranes escaped into the bed. The placenta was removed by the hand, the patient recovered well, though the cicatrization of the rupture was not complete until after the lapse of ten weeks. A singular and unique case of fatal rupture of the vagina at the end of pregnancy, but before labour had commenced, is recorded by Dr. Doherty.|| The patient in whom it occurred had a somewhat contracted pelvis, and her vagina was in an unhealthy state as the result of the severity of her previous labour. Dr. Doherty supposes that

\* London and Edinb. Monthly Journal, March 1844.

† Bull. Gén. de Thérap. Oct. 30. 1844.

‡ American Journal of Med. Science, April 1844.

§ Edinb. Med. Surg. Journal, April 1845; extracted from Allg. Repert. June 1844.

|| Dublin Hosp. Gazette, May 15, 1845.

ident was produced by some turn of the patient in bed, by which the ovum was suddenly inclined to the opposite side of the abdomen; the diseased vagina gave way, being unable to bear the stress thus put on it. The os uteri was found after death perfectly closed, and the vagina corresponded to the right linea ileo pectinea, which, was not sharper or more prominent than natural.

*Extra-uterine pregnancy.* Dr. G. A. Carus\* has published a paper on *Interstitial or tubo-uterine pregnancy*, supplementary to his dissertation on the same subject which appeared in the year 1841. In this paper he relates more or less fully the particulars of fifteen cases, of which he has either found a description in medical writings, or has seen specimens in anatomical collections. He distinguishes two varieties of this form of pregnancy: 1st, *Graviditas utero-tubaria*, in which the ovum reaches only to the point where the tube begins to enter the substance of the uterus, and by its development distends only the tube—not any part of the womb; and 2d, the *Graviditas tubo-uterina*, in *substantia uteri, sive interstitialis*, in which the ovum is developed in that portion of the tube which is actually surrounded by the uterine substance. Of the former occurrence, he relates three cases, the remaining twelve belonging to the second class, and being specimens of true interstitial pregnancy. [The chief merit of the paper, consists in its being a very complete and clear description of all known cases of this unusual form of extra-uterine pregnancy.]

*Cases of fallopian pregnancy* are detailed by Mr. Elkington,† M. Velpeau,‡ and Dr. Lietch.§ Mr. Elkington's patient survived for more than four years, and death then took place by the accidental strangulation of a fold of the ileum between two bands of omentum which were adherent to the cyst. M. Velpeau's patient died at the end of two years, in consequence of a puncture of the cyst through the walls of the vagina and the supervention of peritonitis. Dr. Lietch's patient died with symptoms of stone at the end of five years. The ovum had originally occupied the right fallopian tube, but had escaped into the abdomen, where it had formed adhesions with the right iliacus internus muscle on one side, and on the other had become connected with and ulcerated into the bladder. In the cavity of the bladder was a calculus of the triple phosphate which had formed around a foetal tibia. Charleton, Wheatcroft, Bacchetti, v. Dam, Hiller, and Hemard,|| have each observed a case of *abdominal pregnancy*. In all these cases the patients died, though not always from the immediate consequences of the occurrence. In Charleton's case death took place at the 9th month, pains, like those of labour, having then come on; but it appears uncertain how far the rupture of the cyst into the vagina which was found after death was the result of efforts to turn the child which were made under a misconception of the nature of the case. Life was prolonged for three years in Wheatcroft's case, the patient eventually dying from exhaustion. Foetal bones had been passed per rectum, but it is remarkable that though the sac communicated very freely with the uterus there was at no time any discharge from the vagina. Dr. Bacchetti's patient had labour-pains at the end of the regular term of pregnancy which subsided in the course of a fortnight, she afterwards gave birth to two living children, and it was not till ten months after the birth of the second, that the abdominal tumour grew soft, and that fever and diarrhea came on, which destroyed life five years and three months after the occurrence of the extra-uterine conception. v. Dam's case is not very clearly described; but it appears to have been an instance of natural pregnancy, in which rupture of the uterus took place during labour,

\* Neue Zeitschrift f. Geburtskunde, Bd. xv, p. 161.

† Provincial Med. Journal, Jan. 8, 1845.

‡ Gaz. des Hôpitaux, Mai 6, 1845.

§ Lond. and Edinb. Monthly Journal, Feb. 1845, p. 106.

|| Med. Gazette, Feb. 16, 1844; Lancet, Feb. 24, 1844; Gaz. des Hôpitaux, Oct. 24, 1844; Oppenheim's Zeitschr. März 1845, p. 361; Med. Zeitung, April 16, 1845; Lancet, Oct. 12, 1844.

and the fœtus escaped into the abdominal cavity. At the end of 21 months severe pain again came on in the abdomen, which having lasted for 8 months, v. Dam performed gastrotomy and removed the fœtus. In 17 months the patient again became pregnant, and when in the last month of utero-gestation pain came on in the situation of the cicatrix, a sac-like prominence formed at the opening in the abdominal muscles, and the woman died in a state of collapse; the fœtus having passed through a laceration in the cyst which contained it, and which was situated behind the uterus, and formed to a great extent the posterior wall of the organ. In Dr. Hiller's patient, the fœtus lay between the uterus and rectum, and was partly driven by the violent expulsive efforts through a rent in the vagina, which is said to have taken place without any manual interference. The patient died undelivered. Mr. Hemard's patient died exhausted at the end of three years, having passed some fœtal bones by the urethra, and communications were found to exist between the cyst containing the fœtus and the bladder.

#### NATURAL LABOUR.

*Management of labour.* Dr. W. Smith,\* in an ingenious but rather prolix paper, dwells on the importance of altering the position of a woman during labour, according to the degree of inclination of her pelvis. He attaches, though chiefly on theoretical grounds, very considerable importance to obliquity of the uterus as a cause of protracted labour, and conceives that by changing the woman's position the axis of the uterus and that of the pelvis may be made to coincide. [Two fallacies lie at the bottom of Dr. Smith's argument: first, the assumption that the relation of the pelvis to the lower part of the vertebral column may be materially altered by the woman's position,—a thing clearly impossible owing to the very slight mobility of the pelvis backwards or forwards on the spine; and second, the misapprehension of the relation between the axis of the uterus and that of the pelvis, which will always be found to correspond, except in some cases of great deformity of the pelvis, or where, from a relaxed state of the abdominal integuments, pendulous belly exists.†

Dr. Breen‡ advocates the late Dr. Hamilton's practice of artificially dilating the os uteri, and thus abridging the duration of labour in cases where the first stage is tedious. He does not adduce much new evidence in favour of the practice, but the mere opinion of one who has had large experience is entitled to some weight.

Dr. Beatty§ and Dr. Hardy|| have published the results of some researches upon the influence of the ergot of rye on the mother and the child. Dr. Beatty thinks that the powers of this drug have generally been either over or underestimated. He believes, however, that it exerts a poisonous influence on the fœtus, which becomes evident if the child be not born within a certain period, which he fixes at three hours after its administration. He conceives that it destroys the child not merely by exciting violent uterine action, but by its directly poisonous properties, since many children who were not still-born after its employment had peculiar convulsive affections which continued in some instances for several days. These convulsions too were very dissimilar from those which occur in any form of asphyxia neonatorum, while their resemblance to those which have attended ergotism in the adult further support this opinion. Dr. Hardy entertains similar views to those of Dr. Beatty with reference to the influence of the ergot on the fœtus, since the child was still-

\* Edinburgh Medical and Surgical Journal, Oct. 1844.

† On this subject the reader may consult with advantage Boer's observations, *De obliquitate uteri*, in his *Septem Libri de Obstetricia Naturali*, lib. II, cap. 1; and Nægele's at § xlii, of his book, *Das weibliche Becken*—where are two remarkable cases of extreme deviation from the natural inclination of the pelvis, without any disturbance of the perfectly natural course of labour.

‡ Lancet, May 11, 1844.

§ Dublin Journ. of Med. Science, May 1844.

|| Ibid. May 1845.

born in 33 out of 47 cases in which the ergot was given, and in 15 of these 33 no instrumental interference whatever was resorted to, to which its death could be attributed. Dr. Hardy found that the action of the drug begins to be perceptible in 15 minutes on the average, that in 19 out of 47 cases it caused a diminution in the frequency of the mother's pulse which often continued for several days. The pulse of the fœtus was still more frequently diminished in frequency, and in those cases where the fœtus died it likewise became irregular, then intermittent, and finally ceased.

*Signs of delivery.* Dr. Cormack\* has examined into the value of the dark abdominal line noticed by Dr. Montgomery† as occurring in some instances after parturition, and to which Mr. Turner‡ attached great importance as a sign of recent delivery. Dr. Cormack has almost always observed it after delivery at the full time; but he has likewise seen it during menstruation and pregnancy and after abortion. He has also noticed it in women who were in none of the above conditions, and who had no affection of the uterine system, as also in a few instances in men. He hence attaches to it but little diagnostic value; a conclusion in which Dr. Montgomery,§ in a communication on the same subject, coincides. The latter mentions a dark areola round the umbilicus, which he has occasionally seen after mature delivery, but not at other times, though he does not imagine it to be limited to that period.

*Plurality of children.* A case of triplets is related by Mr. Arman,|| in which the children, two girls and a boy, were all living. Three instances are likewise recorded in which women had four children at a birth. In the first case¶ the children were all boys and all born alive, but died on the fifth day. In the second,\*\* the mother had previously given birth to triplets—two boys and a girl. In the succeeding labour she had three boys and one girl. One boy died on the following day; but the other children survived. In the third case† two of the children were male, and two were female; they were all born alive, and were thriving thirteen days after birth.

Dr. Pfau‡‡ relates a case of twin labour in which there was complete suspension of uterine action for seven days, between the birth of the first and second child. A similar case, but in which the interval was thirty-two days, is recorded by Mr. Irvin,§§ and a third is related by Dr. Wildberg,||| in which it extended to two months. In this last case no milk was secreted till after the birth of the second child, when it at once became very abundant.

#### PRETERNATURAL LABOUR.

*From causes depending on the mother. Abnormal states of the uterus.* Dr. Pellegrini¶¶ relates a case in which labour was protracted by a great enlargement of the anterior lip of the uterus, which shrank to a third of its former size directly after the extraction of the child, and totally disappeared by the fourth day after delivery. Dr. Pellegrini supposes it to have been a *varix of the os uteri*. A case is related by Dr. Bedford,\*\* in which it was necessary to incise the os uteri during labour, in consequence of its edges having become agglutinated by inflammation, the result of attempts on the part of the patient to induce abortion by mechanical means. Labour had continued ineffectually for 29 hours, but within ten minutes after the os was incised the child was

\* Lond. and Edinb. Monthly Journ. Feb. 1844.

† Signs and Symptoms of Pregnancy, pp. 304-7.

‡ London and Edinburgh Monthly Journal, Aug. 1842.

§ Dublin Journal, May 1844.

|| Lond. and Edinb. Monthly Journ. Nov. 1844.

¶ Pfau, Oest. Med. Wochenschr. Feb. 10, 1844.

\*\* Anonymous writer, in Schmidt's Jahrb. Bd. xlii, No. xii, Heft 3.

†† Black, Northern Journal of Medicine, March 1845, p. 265.

‡‡ Oesterr. Med. Wochenschr. April 20, 1844.

§§ Medical Times, Dec. 28, 1844.

||| Oesterr. Med. Wochenschr. April 5, 1845.

¶¶ Arch. Gén. de Méd. Aug. 1844.

\*\*\* New York Journal of Medicine, March 1844.

born, and the patient did perfectly well. Dr. Davis\* and Mr. Reardon† have each met with a case in which the lower segment of the uterus was separated in labour; the os uteri having been perfectly rigid and undilatable. In both instances the patient did well.

Two cases of extreme *obliquity of the uterus* are detailed by Dr. Pellegrini and Dr. Bresciani di Borsa.‡ In the former case the abdomen was so pendulous that the uterus rested on the patient's thighs. Delivery was effected by turning, but the woman died of metropéritonitis on the fourth day. In Dr. di Borsa's patient the obliquity of the uterus was lateral, the womb hanging like a retort over the right ileum. This malposition was apparently owing to great deformity of the pelvis, which rendered the Cæsarean section necessary from which the patient recovered. An instance of labour, complicated with *prolapse of the uterus*, very similar to Dr. Perfetti's case recorded in the last Report, is detailed by Dr. Darbey.§

Dr. de Billi|| relates the history of a patient whose uterus became *retroverted* at an early period in her second pregnancy, and continued so, attended as utero-gestation advanced with very urgent symptoms, until the middle of the eighth month. A discharge of fluid then took place, and three days afterwards labour-pains came on. Externally the uterus seemed of natural size and form, but a large round tumour was felt between the uterus and rectum, and the os uteri was very high up, tilted five fingers' breadth above the pubes, quite beyond the reach of the hand. Notwithstanding this misplacement the patient had always voided her urine, though with great difficulty. Dr. de Billi reduced the uterus by pressure on its fundus, exerted through the vagina, while counter-pressure was made externally. The child, which presented by the breech, was stillborn, but the mother recovered well. [This case fully substantiates the accuracy of Dr. Merriman's observations in his Dissertation on Retroversion of the Womb, and adds another to the very small number of cases in which the womb has continued retroverted up to the commencement of labour.]

*Inversion of the uterus.* The first part of a very valuable essay on this subject has appeared from the pen of Mr. Crosse.¶ The simple detail of facts has been his object in this part; but he promises in the second to consider the causes, diagnosis, and treatment of the affection. He proposes the terms depression, introversion, perversion, and total inversion to designate the different degrees of this accident, and describes minutely the mechanism of its occurrence, during parturition. Its symptoms and immediate consequences are stated less fully, but will be examined in the second part of the essay. Cases of spontaneous inversion of the uterus during labour are recorded by Messrs. Barker, Crosse, Clarkson, and Edwards.\*\* In Mr. Barker's case the accident occurred about twenty minutes after the expulsion of the placenta; the hemorrhage was profuse, but the uterus was reduced in the course of half an hour. The inversion was produced in Mr. Clarkson's patient by the same pain as expelled the child, and detached the placenta. There was great depression of the system, but not very severe hemorrhage: and the uterus was easily reduced. In Dr. Edwards's patient the inversion occurred after the expulsion of the child, the placenta being still partially adherent, and the hemorrhage very profuse. The uterus was reduced after the removal of the placenta, considerable internal hemorrhage subsequently occurred, but the patient recovered. Mr. Crosse's case is interesting from the same accident having occurred once before to the patient. On both occasions it was connected with morbid adhe-

\* Dublin Med. Press, Jan. 15, 1845.

† Ibid. March 19, 1845.

‡ Archives Gén. de Médecine, Fevr. 1845.

§ Dublin Medical Press, Nov. 6, 1844.

|| Annali Univ. di Med. Febb. 1845, p. 312.

¶ An Essay on Inverted Uteri; in Trans. of the Prov. Med. and Surg. Association, vol. xlii, p. 285.

\*\* Medical Gazette, April 5-12, 1844; Prov. Med. and Surg. Journal, June 12, 1844; Lancet, Dec. 28, 1844; Ibid. April 5, 1845.

sion of the placenta, which body was removed by the hand. On the second occasion of its occurrence, attempts at reposition instituted after the lapse of an hour were quite unsuccessful. In the cases related by Mr. Square, Dr. Esselman, Dr. Gazzan, and Dr. M<sup>c</sup>Clintock,\* it is either expressly stated, or may be fairly assumed that traction had been made by the funis to remove the placenta. The first of these cases shows the importance of not omitting to make a vaginal examination whenever considerable hemorrhage occurs, and continues after labour; since from that omission the inversion was not detected till ten days after delivery, at which time it was found to be irreducible. Dr. Gazzan succeeded in reducing the uterus on the ninth day, having previously brought the patient under the influence of antimony. In Dr. Esselman's case, and in the two related by Dr. M<sup>c</sup>Clintock, unsuccessful attempts to reduce the uterus had been made before the patients came under the care of those gentlemen, and the disease had passed into a chronic condition. The cases recorded by the four last-mentioned writers are important, inasmuch as they show the possibility of *inversio uteri*, not occurring, or at least not giving rise to well-marked symptoms until some hours or even days after delivery.

Dr. Oldham† relates six cases of labour complicated with *polypus uteri*, five of which have not been published before, none of them, however, occurred under his own observation. He notices the difficulty of ascertaining the presence of polypi during pregnancy, and the fact that they by no means constantly derange the process of labour. The most dangerous symptom to which under these circumstances they may give rise, is serious hemorrhage. He recommends that unless such hemorrhage exist, no attempt be made to remove the polypus immediately after delivery. The cases he relates illustrate the differences with respect to this point of practice which different symptoms may render necessary. M. Aubinais‡ relates a case in which the introduction of the hand to remove an adherent placenta gave rise to the discovery of a polypus of the size of an egg, to which the placenta was attached, and from which it could not be separated. The pedicle of the polypus was easily twisted off, and no hemorrhage followed its removal. No peculiar symptom indicative of its presence had existed during pregnancy.

A case of labour obstructed by a *longitudinal septum dividing the vagina* into two cavities, only one of which communicated directly with the os uteri, is related by M. Lesaing.§ The patient was safely delivered after the septum had been divided. Mr. Headland|| has observed a case in which the birth of the child was obstructed by the presence of a large malignant ovarian cyst in the recto-vaginal pouch. The cyst burst under the pressure of the child's head, and delivery was effected by the forceps, but death took place in twenty-four hours. An instance of *osteosteomatous tumour of the pelvis*, causing an impediment to the passage of the child, and requiring the performance of craniotomy is related by Dr. Pellegrini.¶ [Of all the causes of obstructed labour, none are so rare as the presence of osteosteomatous tumours in the pelvis, of which two other observations only are on record; in Puchelt, de Tumoribus, etc. p. 48.]

*Rupture of the uterus, and laceration of the vagina.* References are contained in the note to several fatal cases of rupture of the uterus or vagina, all of which occurred spontaneously independent of any manual interference, or of the existence of disproportion between the mother and child.\*\* In five of

\* Provincial Medical and Surgical Journal, July 24, 1844; American Journal of Medical Science, Jan. 1844; Ibid. April 1844; Dublin Journal, May 1845.

† Guy's Hospital Reports, New Series, vol. II.

‡ Lancet, June 22, 1844.

§ Gaz. Médicale, Sept. 7, 1844.

§ Ibid.

¶ Archives Gén. de Méd., Aug. 1844.

\*\* Rendell, Med. Times, May 4, 1844; Arnold, Prov. Med. and Surg. Journal, July 24, 1844; Wright, Boston Med. Journal, June 1844; Elkington, Prov. Med. and Surg. Journal, Sept. 11, 1844; Griscom, New York Journal of Medicine, May 1844; Adler, Neue Zeitschrift f. Geburtak. Bd. xvii, Heft 1; Bond, American Journal of Med. Science, Jan. 1845; Pavetti, Gaz. des Hôp., 14 Juin 1845.



these cases, (those related by Messrs. Rendell, Arnold, Bond, and Pavetti,) softening of the uterus appears to have preceded the occurrence of the rupture; but in the other four it is difficult to assign any cause as having predisposed to the accident. In Dr. Wagstaff's case\* two exostoses on either side of the symphysis pubis appear to have caused the accident; in the cases recorded by M. Laborie, and Professor Trefurt,† the uterus gave way during the operation of turning, and in the instances related by Dr. Fahnestock and Dr. Feldmann,‡ the child was hydrocephalic. In these cases likewise the patient died. Drs. Brühl, Majer, C. H. Kühn, Graus, and Morgan,§ have detailed cases of recovery after alleged rupture of the uterus. Dr. Brühl's case is not very clearly reported; but it appears that the treatment adopted by him as well as by Dr. Majer was decidedly antiphlogistic. The injury in Dr. Majer's case consisted in laceration of nearly half of the vagina from the cervix uteri; but the rent healed speedily, and the patient left her bed in four weeks. In Dr. Kühn's case some of the symptoms of ruptured uterus having occurred, he nevertheless administered the ergot of rye, and repeated it at intervals during eight hours. At the end of that time, the child passed into the abdominal cavity, on which he performed gastrotomy, and having removed the child, the woman recovered without any very grave symptom. M. Graus's case is a still more extraordinary instance of recovery after the most unwarrantable interference, such as injecting fluid into the abdominal cavity through the laceration in order to favour the escape of pus. It is by no means clear that Dr. Morgan's was a case of rupture of the uterus; no sign of rupture occurred during labour, and when seen by Dr. Morgan thirty-six hours after delivery, the patient was suffering from constipation of ten days' standing, and indications of abdominal inflammation. Blistering the abdomen, the use of calomel and purgatives were succeeded by amendment, though the uterus continued large, hard, and painful. Ten days after delivery, violent hemorrhage occurred per vaginam, and after the lapse of another seven days, the fæces began to pass by the vagina, and continued to do so for thirty days. The patient gradually recovered.

Trefurt|| makes some observations on *sanguineous tumours of the labia* occurring during labour, and relates the particulars of a case which terminated fatally in the course of a few minutes from rupture of the labium, and uncontrollable hemorrhage. In this case the veins of the thigh and of the labia appear not to have been varicose, and no reason could be assigned for the accident. The same writer has collected all recorded instances, fourteen in number of *disjunction of the symphysis of the pubis*¶ during labour, and has added the particulars of an instance of the kind which occurred in his own practice. The patient was affected with mollities ossium, and consequent deformity of the pelvis; the forceps were applied to accomplish delivery; and though no great force was used, yet in consequence of the diseased state of the parts the symphysis pubis was separated, the ligamentum arcuatum torn through, and the connexions between the sacrum and the ossa inominata were loosened.

*Preternatural labour, from causes depending on the child or its appendages.* Dr. Simpson\*\* in an extremely interesting paper, has investigated the influence of the *sex of the child* on labour. After confirming the late Dr. Clarke's statements with reference to the larger size of the head of the male fœtus, he endeavours to show that the difficulties of parturition, and the dangers both to mother and

\* New York Journ. May 1844.

† Gaz. des Hôp. July 30, 1844; Abhandlungen, etc. p. 301.

‡ New York Journal, May 1844; Med. Zeitung, No. 10, 1844.

§ Casper's Wochenschrift, 18 Mai, 1844; Schmidt's Jahrb. Bd. xliii. No. viii. p. 47; Oesterr. Med. Wochenschr. Oct. 12, 1844; Dr. Ranking's Retrospect, p. 168; and American Journal of Medical Science, April 1845, p. 521.

|| Op. cit. p. 314.

¶ Ibid. p. 180.

\*\* Edinb. Medical and Surgical Journal, Oct. 1844.

child are greater in male than in female births, and that no reason exists for this difference, other than that furnished by the larger size of the male head. His ingenious tables cannot be given in this Report, but the conclusion at which he arrives is that there is an excess of male children, to the amount of 20 per cent. among stillbirths, owing to the larger size of the male cranium; and that from the same cause among women dying during or after labour, the proportion who have given birth to male children is to those who have given birth to females as 168 to 100.

Dr. Lecluyse\* relates the case of a woman in whose labours the *arm* of the child *presented* thrice in succession, an occurrence that he attributes to the peculiar form of the uterus which had become remarkably developed in its transverse diameter. Mention may be made of the publication of a second edition of Dr. Douglas's pamphlet on the process of Spontaneous Evolution; to six cases† of which references are given in the note. In all of these cases but the last, the children were stillborn, and in that the child survived but a very short time.

Trefurt‡ is very earnest in his recommendation of turning by one foot in all cases, and advises that no attempt should be made to seize the second except where it is found impossible to turn without so doing. He examines the history of the practice, and states the different arguments against the operation very fully and candidly, as well as those in its favour. As far as the preservation of the life of the child is concerned, his results are rather more favorable than usual, since the proportion of living children that he obtained was 43 per cent. Dr. Simpson,§ following the advice of some writers, prefers turning by the knee whenever it is practicable to seeking for the feet. He recommends that on all occasions the foot or knee of the side opposite the presenting part should be seized. He conceives that by so doing the rotation of the child on its long axis is greatly facilitated, a manoeuvre by which the removal of the presenting arm from the os uteri is effected.

Dr. Walter|| relates the history of a patient whose delivery was impeded, she being pregnant with twins, by the head of the second child which presented naturally, resting against the chest of the first child which presented by the breech, and thus preventing its expulsion. He eventually succeeded after much difficulty in raising the head of the second child, sufficiently to allow the other to be expelled. The first child was stillborn, but the second was born alive.

M. Hirs¶ has discussed the influence of a *twisted* or preternaturally *short umbilical cord* in delaying the passage of the head through the pelvis, and impeding delivery. He attaches great importance to it; and not only appeals to the authority of von d'Outrepoint in support of his opinions, but relates three cases which came under his own observation, and which seem to bear out his views. He recommends that in these cases the forceps should be applied, and the cord divided as soon as it, or the neck of the child around which it is twisted, comes within reach.

M. Danyau\*\* asserts that blood extravasated on the foetal surface of the placenta sometimes becomes an organized tumour, which increases in size, interferes with the nutrition of the fœtus, and occasionally presents a mechanical obstacle to the removal of the placenta. He relates two cases illustrative of these views, of which the following was the most striking. The foetal surface of the placenta presented near its circumference an oval tumour, subjacent to

\* Annales de la Soc. de Méd. d'Anvers, Février 1845.

† Danyau, Gaz. des Hôp. 18 Juin 1844; Edwards, Lancet, May 25, 1844; Wardleworth, Ibid. Aug. 3, 1844; Susewind, Casper's Wochenschrift, June 8, 1844; Casp. Med. Zeitung, May 8, 1845; Gamberini, Gaz. des Hôpitaux, Juin 7, 1845.

‡ Op. cit. p. 1-95.

§ London and Edinburgh Monthly Journal, Feb. 1845.

|| Neue Zeitschr. f. Geburtsk. Bd. xvi, Heft 2, p. 171.

¶ Gaz. Médicale, Mai 10-17, 1845.

\*\* Journal de Chirurgie, Janv. 1844.

the amnion and chorion  $4\frac{1}{2}$  inches long, by 3 inches broad. This tumour was slightly lobular, its lobules being closely adherent to each other; some of a dirty white, others of a pale rose tint, and of a very various texture. It was traversed by large branches of the umbilical vessels, some of which entered it, but many of these vessels were blocked up with coagula. Another smaller tumour was near it, and the placenta was so much enlarged by these bodies, as to render its extraction difficult. [The cases are interesting, but the evidence of these bodies being organized is far from satisfactory.]

*Operative midwifery. Symphyseotomy.* Dr. David Smith\* advocates this operation on theoretical grounds, and by reasoning which presents nothing novel, as a substitute for craniotomy in cases of contraction of the outlet of the pelvis too considerable for delivery to be effected by the forceps, and yet where a comparatively slight increase of room would allow of the passage of the child. [The arguments by which it has been attempted to support this operation, are most ably refuted by Michell, *De Synchronomonia Pubis*, 8vo, Amstelod, 1783; see also the remarks of Kilian in his *Operationslehre*, Bd. ii, p. 867; and the statistics of the operation as given in Churchill's *Operative Midwifery*, p. 247; all of which furnish unanswerable objections to its performance under any circumstances.]

*The Cæsarean section.* References are given below to seven cases† in which this operation was performed with complete success; the life both of mother and child having been preserved. In Dr. Mestenhauer's case, the operation had already been performed once before in consequence of the presence of a large bony tumour in the pelvis. M. Aubinaist‡ relates a case in which the life of the mother, and Dr. Etlinger§ another, in which the life of the child was preserved. Six cases are related in which both mother and child were lost.¶ [The first of these cases is a remarkable instance of that unhappy procrastination to which it is in great measure owing that the results of the Cæsarean section in this country are so almost invariably fatal. The statistics of the operation, including the cases collected by Kayser in his valuable dissertation which contains none but well-authenticated cases are as follows: The operation has been performed 364 times; in 139 the women recovered, in 225 they died; or the recoveries were in the proportion of 38 per cent.; or as 1 to 2·6. The fate of the child is stated in 304 instances; in 209 it was saved, in 95 it died, or 2 out of 3 children were saved.]

*Premature labour.* Professor Hoffman¶ has published a very elaborate and learned defence of this operation; which will possess greater interest on the continent than in our own country where the operation has so long been approved of, and practised. Dr. Simpson\*\* advocates the induction of premature labour in cases where the death of the fetus has been found to occur frequently during the latter months of utero-gestation. [This practice is propounded by him as if it were novel, but it apparently had escaped his memory that Denman has practised and recommended it under the same circumstances.] Three cases†† are recorded of attempts to induce premature labour, by the use of the

\* Northern Journal of Medicine, Jan. 1845.

† Dr. Ziehl, Bull. Gén. de Thérap. Février 1844; Dr. Luxman, Il Filatre Sebenio, Sept. 1843; Dr. Mestenhauer, Oesterr. Med. Wochenschr. April 27, 1844; M. v. Thibault, Archives Gén. de Méd. June 1844; Dr. Brecciani di Borna, Ibid. June 1845; Dr. Jehn, Casper's Wochenschr. April 12, 1845; Lebleu, Gas. de Méd. Mai 10, 1845, p. 298.

‡ Gas. Méd. Mai 10, 1845, p. 297.

§ Observaciones Obstetricas, etc. 4to; Bonno, 1844.

¶ Cox, Prov. Med. and Surg. Journal, Sept. 18, 1844; v. Thibault, Arch. Gén. de Médecine, June 1844; Etlinger, Op. cit. p. 49; Coley, a case of Cæsarean Operation, &c. Bridgnorth, 8vo; Löhr, extracted in London and Edinb. Monthly Journal, April 1845, p. 333; E. von Siebold, Neue Zeitschr. f. Geburtsh. Bd. xviii, 1 Heft, p. 48.

¶ Ibid. Bd. xv, Heft 3, and Bd. xvi, Heft 1.

\*\* Lond. and Edinb. Monthly Journal, Feb. 1845.

†† By Drs. von Haselberg, Feldmann, and Naegels of Dortmund, in Preuss. Med. Zeitung, Jan. 10, April 10, Dec. 4, 1844.

vaginal tampon as employed by Schöller; but the results can scarcely be regarded as favorable to the proceeding since uterine action was not induced in the first case till after 40 hours, and in the third till 23 days, [during the whole of which time the child must go on increasing in size, and the advantages of the operation be daily diminishing.] Von D'Outrepoint\* prefers puncture of the membranes to any other mode of inducing premature labour; concerning which he has concluded after giving them a trial, that they are either uncertain in their action, or expose the mother to risk, or at least to pain and annoyance far exceeding that produced by puncture of the membranes, or else they peril the child still more. An interesting case is recorded by Drs. Hoeniger and Jacoby,† in which they employed galvanism to excite uterine action in a case where the introduction of sponge tents into the os uteri, and the administration of the ergot of rye had been had recourse to without effect, in order to induce premature labour. The use of an electro-magnetic apparatus was immediately followed by the reexcitement of uterine action. Its use was continued only for half-an-hour, at the end of which time the os uteri was so far open that the membranes could be easily ruptured, and in another half hour the child was born alive.

*Uterine hemorrhage.* M. Loir and Mr. Thompson,‡ both record a case of fatal internal hemorrhage, occurring before the birth of the child. In M. Loir's case, the symptoms of faintness, exhaustion, &c., occurred in the 7th month of pregnancy, and were almost unattended with uterine action. The os uteri was undilatable, and delivery was effected by incising it, and extracting the child. The patient soon died; and on a post-mortem examination the placenta was found detached at its centre by an immense effusion of blood between it and the uterus. Mr. Thompson's case closely resembles the preceding in the sudden accession of faintness, and the almost total absence of uterine action. The patient died undelivered, the placenta being completely detached from the uterus, and an immense effusion of blood having taken place between the membranes of the ovum and the womb. In neither case was there the slightest escape of blood externally. [Cases similar to the above have been collected by Baudelocque in his essay on this subject, and are referred to by Velpeau, *Traité des Accouchemens*, tome, ii, p. 88; a case is likewise mentioned by Mr. Crowfoot, in *Ed. Med. Surg. Journal*, Oct. 1824; and another by the late Dr. Ingleby in his Lectures.]

*Unavoidable hemorrhage.* Dr. Simpson,§ in a very interesting paper on this subject, has collected 141 cases of placenta presentation in which that body was either expelled or extracted before the child; only 10 of which were followed by the death of the mother, while 115 out of 399 cases of placenta previa, treated in the ordinary way proved fatal. It further appears that the presence or absence of flooding after complete separation of the placenta is not influenced by the length of time that elapses between its detachment and the birth of the child. It was apparently a knowledge of these facts, though not an acquaintance with their full extent, that induced Mr. Kinder Wood|| to recommend the complete detachment of the placenta in some cases of unavoidable hemorrhage. This practice has with certain modifications been advocated by Dr. Radford¶ of Manchester, and has likewise been followed by Dr. Simpson of Edinburgh, though he does not seem to have a fair claim to the honours of priority in its adoption. Dr. Radford aims to discountenance the too great haste in resorting to

\* Neue Zeitschrift f. Geburtak. Bd. xvi, Heft 1.

† Ibid. Heft 3.

‡ *Révue Médicale*, Août 1844; *Med. Gazette*, Nov. 29, 1844.

§ London and Edinburgh Monthly Journal, March 1845. To these cases may be added another similar one by Mr. Tennent, Lond. and Edinb. Monthly Journal, June 1845.

|| Extracts from Mr. Wood's lectures, and copies of some of his cases are given by Dr. Radford, in *Prov. Med. and Surg. Journal*, Feb. 26, 1845.

¶ Provincial Medical and Surgical Journal, Dec. 24, 1844, and Jan. 22, 1845.

artificial delivery in all cases of hemorrhage, and to point out galvanism as a powerful agent in inducing uterine contraction. His recommendation is not merely theoretical, but he has employed it successfully in one instance by applying one conductor of an electro-magnetic apparatus to the os, and the other over the fundus uteri; and breaking contact occasionally, but continuing to employ it till the desired effect was produced. Galvanism has since been used with success in a case of uterine hemorrhage by Mr. Cleveland.\* [The employment of galvanism to excite uterine action had already been suggested by v. Herder in his *Beiträge zur Erweiterung der Geburtshülfe*, Leipzig, 1803; and Stein had with the same view recommended the use of forceps, the two blades of which should be of different metals,† but Drs. Hoeniger and Jacoby, and Dr. Radford are unquestionably the first who have reduced the suggestion to practice.] Dr. Radford cautions against attempts to deliver in cases of unavoidable hemorrhage, before the os uteri is sufficiently dilated. He recommends the rupture of the membranes in cases of partial placenta presentation, advises when the placenta is seated fully over the os if exhaustion be present, that the liquor amnii be drawn off gradually by perforating the placenta, (with an instrument like that of Holmes for the induction of premature labour,) and that the placenta be then completely separated. He further advocates the detachment of the placenta, coupled when necessary with the use of galvanism as generally applicable to all cases of complete placenta presentation.

*Midwifery statistics, reports of hospitals, &c.* The note contains references to papers on these subjects.‡ Dr. Ramsbotham's tables are very valuable, since they embody the results of 35,743 deliveries; and an account of about half that number forms the subject of Professor Klein's report. The mortality of the hospital at Vienna as stated by Dr. Klein, amounted to 6·6 per cent.; while that of the Dublin Lying-in Hospital under Dr. Collins, was 1 per cent., and of the patients of the London Maternity Charity 4 per cent. Some explanation of this occurrence may be thought to be afforded by the fact that Dr. Klein used the forceps once in 32 times, Collins once in 608, and Ramsbotham once in 729. The actual mortality among the forceps cases does not appear from Dr. Klein's report.

#### THE PUERPERAL STATE.

*Puerperal fever.* The learned work of Dr. Litzmann,§ which contains a historical sketch of the principal epidemics of this disease that have prevailed at any time, supplies a deficiency in medical literature. Dr. Litzmann likewise describes an epidemic which he witnessed at Halle in the years 1840-1. Dr. McClintock has detailed|| the particulars, an epidemic which broke out quite unexpectedly at the Dublin Lying-in Hospital, in the early part of 1845. This epidemic was characterized by great depression of the vital powers, and proved speedily fatal. During the time of its prevalence, erysipelas was unusually frequent in other hospitals in the city. Dr. Blackmore¶ has published a series of papers, the object of which is to establish the identity of the poison

\* Medical Gazette, June 27, 1845.

† Busch und Moser's Handbuch der Geburtakunde, Band ii, Art. Galvanismus.

‡ Dr. H. F. Ramsbotham, report of the Maternity Charity, Med. Gazette, May, June, July, 1844, and in the Appendix to his book; Dr. Burwell, report of the Philadelphia Hospital, Amer. Journal of Med. Science, April 1844; Dr. Murphy, report of Midwifery Practice at University College, Dublin Journal, Nov. 1844; Dr. W. Campbell, statistics of 5784 cases, in Northern Journ. of Med. June 1845; Mr. Watson and Dr. Waddy, Prov. Med. and Surg. Journal, Dec. 4, 1844, and Jan. 15, 1845, cases in private practice; Professor Klein, report of Lying-in Hospital at Vienna, Oesterr. Med. Jahrb. Jan., Feb., März 1846.

§ Das Kindbettfieber, etc.; Halle, 1844, 8vo.

|| Dublin Journal, May 1845.

¶ In the Prov. Med. and Surg. Journal during the early part of 1845.

of puerperal fever with that of erysipelas, and to show that the treatment applicable to it is not such as would be suitable in cases of sthenic inflammation. Mr. Storr,\* of Doncaster, relates several cases in illustration of the fact that the contagion of puerperal fever may produce in persons not in the puerperal state, either peritonitis, or inflammation of some of the serous membranes attended with low fever; or local or general erysipelas, or various forms of typhus fever. A remarkable illustration of the affinity between puerperal fever, and other diseases the result of morbid poisons is contained in Dr. Murphy's Report of the Obstetric Practice of University College.† Having had occasion to remove the placenta of a patient who died soon afterwards from puerperal fever, several pustules appeared two days afterwards on the arm which he had introduced into the uterus. The appearance of these pustules was attended with considerable constitutional disturbance, and one of them assumed much of the character of malignant pustule. Mr. Farr‡ has made some observations on the rate of mortality in childbed, and on the share which puerperal fever has in its production. He has likewise published in his report an interesting document furnished by Mr. Bossey of Woolwich, which shows by facts occurring in his own practice, the highly contagious nature of puerperal fever. M. Botrel§ describes two epidemics of puerperal fever which prevailed in the city and hospital of Rennes, in 1842 and 1844. He proposes for the disease as he observed it, the name of *angioleucite uterine*, since it was characterized by inflammation of the uterine lymphatics without any affection of the veins. The blood presented various deviations from a healthy condition, and purulent deposits in the lungs were by no means unusual. He believes that it depended on atmospheric causes, especially on dampness and highly electric conditions of the air; but rejects, though scarcely on adequate grounds, the influence of deficient ventilation in its production as well as the notion of its being propagated by contagion. Its attacks usually commenced with violent febrile symptoms, soon followed by a condition of stupor. The abdominal pain, at first confined to the uterine region, extended speedily over the whole abdomen, and for a short period was very excruciating, but ceased almost entirely as the state of depression increased. The prostration of all the powers, and the affection of almost all the functions of the body when this typhoid state supervened were very remarkable, and terminated after a short period in death. Some patients died in 36, others in 40 hours, but the 5th day was the period of the greatest mortality. Very few of those who were attacked survived; in 1842, only 4 recovered out of 24 who were attacked, and in 1844 only 2 out of 22. In those cases in which recovery took place local and general bleeding, purgatives, and mercurials were employed, and when these remedies failed to do good, all other means proved perfectly useless.

M. Marchal de Calvill has published a very elaborate essay on *intra-pelvic abscess*. He treats of the disease in both sexes, but of the 75 cases he records 52 have reference to puerperal women. Of these 52 cases, 44 have already appeared in print, 8 have been communicated to M. Marchal by M. Bouchut, but none have fallen under his own observation. The chief value of his pamphlet consists therefore, in the care with which he has collected almost all recorded cases of this affection. Dr. Lever¶ has written a paper on the same affection, containing the account of several cases that came under his own notice. He proposes for it the name of *pelvic inflammation*, in preference to any more definite designation, in consideration of the difficulty that there is in the way of determining what part is primarily affected, whether the cellular tissue of the pelvis or the uterine appendages. A case of this kind is likewise de-

\* Prov. Med. and Surg. Journal, May 7, 1845.

† Op. cit. p. 47.

‡ Fifth Report of the Registrar-general, pp. 360-66. § Arch. Gén. de Méd., Avril, Mai, Juin, 1845.

¶ Reprinted from the *Annales de la Chirurgie*, for 1844.

¶ Guy's Hospital Reports, 1844.

tailed by M. Fouquier,\* and some of M. Simm's† observations on abscesses and chronic engorgements of the iliac fossa belong to the same category, though his remarks apply chiefly to the affection when it occurs independent of labour, and as one of the sequelæ of inflammation of the cæcum. [These essays confirm without adding anything material to the observations of Drs. Doherty and Churchill, referred to in the last Report.]

*Lactation.* Dr. Witte‡ has made some valuable practical remarks on the management of the breast during pregnancy, in order to fit it for suckling. In cases where the nipple is imperfectly developed, he recommends that, after it has been brought into a state of erection, by the application of a warm sponge, an apparatus should be employed consisting of a wooden nipple-shield perforated at its apex, and fitted to an Indian rubber bottle, while its inner surface is rendered adhesive by the application of some adhesive plaster. This is adapted to the nipple when in a state of erection, and the pressure of the hand being removed from the bottle a vacuum is at once formed, by which the nipple is gradually elongated as surely as by an ordinary breast-pump, and with less discomfort. The employment of this apparatus must be continued for five or ten minutes daily, during a longer or shorter period according to the state of the nipple.

Mr. H. H. Davies§ relates an instance of *supernumerary nipple* below the left breast, of the existence of which the patient was not aware until her fifth pregnancy. Dr. Chowne|| likewise mentions a similar case in which the supernumerary nipple was situated two inches below the other nipple, and states that the same peculiarity had existed in this person's mother. He describes also a case of supernumerary mamma which was situated on the thigh, and until the occurrence of pregnancy had been supposed to be merely a nævus, but it then enlarged to the size of half an orange.

A remarkable case of *galactorrhœa* is related by Dr. Green,¶ as having occurred in a lady aged 47; the mother of 4 children, of whom the eldest was born when she was 20, the youngest when she was 33. Ever since the birth of her first child the secretion of milk had continued unabated, but subject to increase at her menstrual periods. She had suckled her own children and two others, all of whom thrived at the breast, and her own health had been unimpaired by the continuance of the secretion.

The appendix to Dr. Ashwell's work on Diseases of Women,\*\* contains a very valuable essay on the morbid consequences of *undue lactation*, in which he shows that the symptoms resulting from it, though usually not appearing till after several months occasionally occur in the course of a few weeks; that organic lesions may, though very rarely, result from undue suckling; and that weaning the child is absolutely essential to the cure.

## II. ON THE PROGRESS OF KNOWLEDGE WITH REFERENCE TO THE DISEASES OF WOMEN.

Since the publication of the former Report, the concluding part of Dr. Ashwell's valuable work on this class of diseases has appeared.†† It includes the diseases of the lining membrane of the uterus, polypus, and displacements of the womb, as well as the diseases of the ovaries and of the external organs. Three out of four parts of M. Meissner's‡‡ work on the Diseases of Women have been published. It is written on the same plan as his manual on the diseases of children, and has all the merits of an extremely well-executed

\* Bull. Gén. de la Thérap. Février 1844.

† Neue Zeitschrift f. Geburtskunde, Bd. xvi, Heft 1, s. 75.

‡ Lancet, June 15, 1844.

§ New York Journal of Med. Sept. 1844.

|| On the Diseases peculiar to Women, Part III, 1844, 8vo.

¶ Die Frauensimrkrankheiten; Leipzig, 1844-5, 8vo.

† Ibid.

‡ Med. Gazette, Jan 26, 1844.

\*\* Part III, p. 721.

compilation, made by a man whose own opportunities for observation have been very considerable. Professor Kiwisch\* whose work on Puerperal Fever was noticed in this Journal some years ago, has announced a work on the diseases of the unimpregnated state. The first volume on diseases of the uterus has appeared in Germany, but has not yet reached this country. Dr. Meigs has published a translation with notes, of the laborious compilation of M. Colombat de l'Isère.† A series of reports on the diseases of women have appeared from the pen of Dr. Rigby;‡ and Dr. Heming§ has contributed several essays on the same subjects.

#### DISORDERS OF MENSTRUATION.

*Amenorrhœa.* Dr. Toogood|| has published some extremely interesting cases in which fatal affection of the brain occurred in chlorotic patients, associated with suspension or irregular performance of the menstrual function. [Notwithstanding its popular title, the pamphlet will well repay an attentive perusal. It may be doubted indeed whether medical practitioners will not benefit by reading it more than the public to whom it is addressed.]

*Dysmenorrhœa.* Dr. Rigby¶ has written a work in which he endeavours to apply the theories of Dr. Prout in explanation of some forms of painful menstruation. His treatise consists of two parts: in the former of which he notices the general results of derangement of the process of assimilation. He insists on the fact that the mucous membranes form one of the grand emunctories for the albuminous principle, when redundant or imperfectly assimilated. Hence it follows that disorders of the assimilative process determine corresponding disorder of the functions of the mucous membranes. Among these the uterine mucous membrane bears its part, and it is especially in connexion with the gouty or rheumatic diathesis that disturbance of its function is most frequent. These disorders are either active when like rheumatic affections of other parts, they are associated with congestion, and are attended by inflammatory symptoms, giving rise to dysmenorrhœa; or chronic, attended with leucorrhœa and chronic affection of the cervix uteri. Symptoms of general impairment of the digestive powers attend the affection, with excess of lithates in the urine, and the formation of fibrinous membranes by the uterus and painful menstruation, or with leucorrhœa and chronic inflammation of the cervix uteri; inducing a gradual suppression of the menstrual flux. Five cases are related in illustration of the author's views respecting the disease, which he conceives is to be treated by remedies applied to the constitutional disorder rather than to the local ailment.

Dr. Simpson\*\* has invented small bougies of German silver about 2½ inches long, which he attaches to a temporary handle, and introduces them into the os uteri in cases of dysmenorrhœa connected with stricture of the orifice of the womb. After being introduced, the handle is unscrewed, and the bougies are left for two or three days. They are more convenient and are said to cause less annoyance than ordinary bougies which were employed for this purpose by the late Dr. Mackintosh.

*Menorrhagia.* M. Ginestet†† praises highly the expressed juice of the common nettle, *urtica dioica*, which he gave successfully in 3ss doses in an obsti-

\* Klinische Vorträge ueber specielle Pathologie und Therapie der Krankheiten des weiblichen Geschlechts; Prag, 1845, 8vo.

† A Treatise on the Diseases and Special Hygiene of Females, by C. de l'Isère. Translated with additions, by C. D. Meigs, M.D. Philadelphia, 1846, 8vo.

‡ In the Medical Times for 1844-5, passim.

§ In the Lancet for 1845, passim.

|| Hints to Mothers, and other persons interested in the Management of Females at the age of Puberty; London, 1844, 8vo, pp. 20.

¶ On Dysmenorrhœa, and other uterine affections in connexion with derangement of the assimilating functions; London, 1844, 8vo.

\*\* Lond. and Edinb. Monthly Journ., Aug. 1844.

†† Bull. de l'Acad. Roy. de Méd. Fevr. 28, 1845.



nate case of menorrhagia. [His recommendation of the remedy appears, however, to be founded on the results obtained in a single case.]

*Discharges vicarious of menstruation*, &c. M. Fourquet\* relates the history of a patient aged 17, who having menstruated regularly for a year, had on one occasion hemorrhage from the skin of the face, the conjunctiva, and the mucous membrane of the mouth, vicarious of the natural function. This anomaly, however, occurred but once, the menses reappearing on the next occasion by the natural channel. Professor v. d'Outrepont† met with a woman who having for some years menstruated regularly injured her arm while menstruating. Ever since that occurrence, discharge of blood has taken place from this wound synchronously with the natural menstrual flux, and ceasing as that did when the patient became pregnant. MM. von Mynck and Kluykens‡ detail the history of a woman whose menses having become scanty and attended with indisposition at each period, at length ceased at the age 52, but were immediately succeeded by a discharge of blood from the left nipple, which continued to return with regularity every month, until the patient's death at the age of 57½. M. le Conte§ relates a singular case in which a negress, aged 70, who had not menstruated for 20 years, began to do so after being struck by lightning, and had continued to menstruate regularly at the time of his report, twelve months afterwards.

#### DISEASES OF THE UTERUS.

*Means of investigating them.* Various modifications of the speculum have been proposed by Dr. Warden, Mr. Smith, Dr. Dixon, and Mr. Moss.¶ Dr. Warden has suggested the application of the reflective prism to specula for examining the ear, vagina, or other closed passages of the body. His very ingenious contrivance cannot be understood without minute description. He suggests moreover¶ a change in the ordinary cylindrical speculum which he conceives would secure most of the advantages to be obtained by the more complex instrument. This modification consists in the removal of an oblique slice from the end of the speculum, which would allow of a lateral view of the vaginal walls, and prevent that puckering of the mucous membrane, when it is introduced or withdrawn, by which a distinct view is often so much impeded. Mr. Smith's speculum is almost the same as Duhois' modification of Récamier's speculum, who had an aperture made in the cylinder for the purpose of detecting small vesico-vaginal fistulæ. Dr. Dixon's and Mr. Moss' specula so closely resemble each other, that in reality they are the same instrument. They consist of wire rods inserted at one end into a ring, and terminating at the other in probe-pointed extremities; and furnished with a plug of polished wood, grooved so as to receive the wires. Dr. Dixon's speculum is furnished with a contrivance for expanding it, which does not appear to exist in that invented by Mr. Moss. [These instruments may be serviceable in some operations on the vagina, but as specula their value must be very small.]

Dr. Simpson\*\* suggests the employment of sponge tents to dilate the os uteri in order to allow of the introduction of the finger to ascertain the state of the cavity in cases of uterine disease; [but it may be doubted whether the uterus would often tolerate their presence, and likewise whether under ordinary circumstances such a dilatation of the os uteri as he speaks of, would be likely to result from their employment.]

*Displacement of the uterus. Prolapsus uteri.* Dr. Chanmet†† describes a modification of Dieffenbach's operation for the cure of prolapsus, which he

\* *Gaz. des Hôpitaux*, Sept. 24, 1844.

† *Oest. Med. Wochenschr.* Dec. 14, 1844.

‡ *Medical Gazette*, May 24, 1844; *Ibid.* July 5, 1844; *Ibid.* July 19, 1844.

§ *Dublin Medical Press*, April 16, 1845.

\*\* *Ibid.* Aug. 1844.

† *Neue Zeitschr. f. Geburtsk.* Bd. xvi, Heft 1.

‡ *New York Journal of Med.* Nov. 1844.

§ *Medical Gazette*, Boston Med. and Surg. Journal, March 1844;

¶ *Lond. and Edinb. Monthly Journ.* Dec. 1844.

†† *Bull. de l'Acad. Roy. de Méd.* Mars 15, 1845, p. 442.

adopted with success. This modification consisted in bringing the edges of the wound together by the interrupted suture, after removing a strip of vaginal mucous membrane  $1\frac{1}{2}$  inches broad. The contraction of the vagina thus produced was very considerable, and the cure was permanent. Professor Blasius\* describes a new operation for procidentia of the uterus, which consisted in the insertion of four circular ligatures beneath the mucous membrane of the vagina, bringing them out again into the passage, then reintroducing them under the mucous membrane, and thus causing them to surround the whole vagina. In the case which he relates the inflammation excited by these ligatures was sufficient to produce a contraction of the whole passage, such as retained the replaced uterus in its proper position, where it continued at the end of eight weeks. Dr. Toogood† relates the particulars of a case of procidentia of the uterus of long standing, in a lady aged 60; in which the organ having descended 7 or 8 inches beyond the external parts, and being quite irreducible, he applied a ligature round it, and then cut it away. It weighed two pounds, its cavity was obliterated, and its substance had acquired an almost cartilaginous hardness. The patient whose health was previously much impaired, recovered perfectly.

*Retroversion of the uterus.* Cases of this accident occurring in the unimpregnated state, are related by Dr. v. Kiwisch, Dr. Helmuth, Mr. Whitehead, and Professor Trefurt.‡ In Dr. v. Kiwisch's case, the displacement was produced by the pressure of a cyst which was most probably ovarian. The cyst suddenly burst into the rectum, whereupon the uterus returned to its natural position. In the second case it seems to have come on spontaneously. Only a week elapsed from the occurrence of the first symptoms to the supervention of complete retroversion. Attempts to effect reposition did not succeed, and were followed by an attack of uterine inflammation. As this subsided after rather active treatment the uterus began to return to its natural position, which at length it completely regained. Mr. Whitehead's case presents many instructive features. The uterus became retroverted in the first pregnancy, but the accident was remedied, and the patient was confined at the full period. The same accident occurred in the succeeding pregnancy, and was followed by abortion in the 3d month, and on two subsequent occasions the patient aborted at the same period. After each abortion she had the sensation of the womb not being in its proper place, and when Mr. Whitehead became aware of the real nature of the case, all attempts at reduction failed. The patient had been for some considerable time under medical care, before the real nature of her ailment was discovered, owing to an examination per rectum having been omitted. [It is probable that the abortions and the irreducibility of the retroverted uterus depended on the organ having contracted adhesions with surrounding parts, as described by Madame Boivin in her *Recherches sur une des causes de l'Avortement.*] The case related by Professor Trefurt is interesting, as having presented all the symptoms of retroversion in a very marked degree. The displacement appears to have existed for five years; ever since the birth of the patient's only child. No attempt at reposition could be made till after local depletion and other preliminary treatment had been adopted. It was then found impossible to exert any force on the misplaced uterus, without exciting most excruciating pain. A peculiarly-constructed pessary, invented by Dr. Sander, of Brunswick, and called by him *mochlo-pessum*, or lever-pessary, was introduced, and eventually tolerated by the patient. At the end of two months the uterus had become more moveable, and was more nearly approximated to its natural situation, and in a few weeks more the misplacement was completely removed. [This instrument of which a description and drawing are

\* Med. Zeitung, Oct. 9, 1844.

† Prov. Med. and Surg. Journ. July 10, 1844.

‡ Oesterr. Med. Jahrb. Feb. 1844; Casper's Wochenschr. Oct. 5, 1844; Med. Gazette, Sept. 13, 1844; and Op. cit. p. 280.

given by Kilian, in his *Operationslehre*, (Bd. iii, Taf. 3, fig. 13,) consists of a ring-pessary to which is attached a curved stem surmounted by an oblong cushion or pessary. A hinge at the origin of the stem allows its inclination to be varied, while a screw at its other extremity, renders it possible to vary its length, and consequently to regulate the pressure in an upward direction which the instrument exercises.]

*Inversion of the uterus.* Mr. Crosse's essay already referred to, contains a most interesting collection of facts illustrating the somewhat obscure subject of chronic inversion of the uterus, after parturition, or occurring in the unimpregnated state in consequence of the presence of uterine polypus, or of the influence of other similar causes. Dr. Oldham\* describes and delineates a preparation of partial inversion of the uterus produced by a polypus which grew from the right side of the fundus uteri, and several most instructive diagrams and plates illustrative of this occurrence are given in Mr. Crosse's essay. Dr. Oldham's remark is doubtless correct, when he says that the inversion is the result of the action of the womb in its efforts to expel the polypus rather than of the mere weight of the body. Dr. Meigs† makes mention of two cases in which he believes that an inverted uterus became spontaneously restored to its natural condition. In one case the uterus was ascertained to be inverted five weeks after delivery, in the other this state had persisted for more than two years after the birth of the patient's child, notwithstanding which, both the women subsequently became pregnant. [It is easier, however, to conceive that even an experienced man should commit an error of diagnosis, than to understand how any efforts of nature could cure a chronic inversion of the womb.] Mr. Crosse, Dr. Esselman, M. Velpeau, and Dr. M'Clintock relate cases in which the inverted uterus was removed, and all the patients recovered with the exception of the woman operated on by M. Velpeau, who died of peritonitis, which supervened almost immediately after the operation. The person whose history is recorded by Dr. M'Clintock, is the fifth on whom Dr. Johnson of Dublin, has successfully operated. Two of his cases are related in vol. iii of the Dublin Hospital Reports; the outline of two others is given in Dr. M'Clintock's paper, besides the particulars of the one already referred to, and the history of another woman whose health was too bad to allow of the operation being performed, and who died nine months after the occurrence of the accident, worn out by hemorrhage and mucous discharge from the uterus.

M. Tessier‡ adduces cases in proof of the existence of *dropsy* and *tympany* of the unimpregnated uterus, in reply to the assertions of MM. Stolz and Naegele, that such diseases are impossible. Their denial of the possibility of such occurrences in the unimpregnated state was founded on the fact of the lining of the membrane of the uterus being mucous, not serous, on its tissue being incapable of any distension, such as the occurrence of these diseases must imply, on the absence of any cause adequate to close the cervix, and on the non-existence of any authentic observations of physometra, or hydrometra. Besides detailing observations by various writers in support of his opinion, M. Tessier relates the particulars of an indubitable and very interesting case of tympanites uteri that came under his own notice.

*Inflammation and ulceration of the os and cervix uteri.* In a series of papers, which have since been republished in a separate form, Dr. H. Bennet§ gives the results of a series of observations on this subject, made at the Hôpital St. Louis, and other hospitals of Paris. He treats, first, of the affection as it occurs in women who have never borne children; then in those who have been

\* Guy's Hospital Reports, new series, vol. ii, pp. 105-36.

† Op. cit. p. 183.

‡ Gaz. Méd. Jan. 5, 1844.

§ In the *Lancet* during the spring of 1845, and under the title of *A Practical Treatise on Inflammation, Ulceration, &c. of the Neck of the Uterus*.

mothers, or are pregnant, and shows that in the latter circumstances the liability of the uterus, and especially of its cervix, to become the seat of morbid action is greatly increased. He differs from those who regard ulceration of the cervix as generally a secondary result, the mere attendant on, or consequence of, inflammation of the lining membrane of the organ, or of hypertrophy, or induration of the cervix. He conceives inflammation and ulceration of the cervix to be frequent as primary ailments, almost invariably present in cases of confirmed leucorrhœa, very common as sequelæ of abortion, and by no means unusual after delivery at the full time, and that hypertrophy and induration are their consequences. In women who are virgins the inflammation and ulceration seldom extend deeper than the mucous membrane; but in those who have been pregnant the more deeply-seated tissues are often involved. He relates many cases of simple ulceration of the cervix uteri, describes its symptoms clearly, and insists on the necessity of the use of the speculum in many cases in order to detect its existence. The treatment which he recommends is chiefly local, consisting in the employment of astringents and caustics of various kinds, the merits of which he discusses fully. In the second part of his treatise he examines the subject of syphilitic and malignant ulcerations of the os and cervix uteri. M. Pereira\* describes as a new and hitherto unnoticed uterine disease, the formation of an adventitious fibrous tissue on the cervix uteri and parietes of the vagina. He states that in some cases of long continued and intractable uterine disease, he has found the cervix uteri drawn from its natural position, and tied down to the walls of the vagina by a kind of false membrane composed of fibrous tissue, or that bands of a similar structure are sometimes found running along the parietes of the vagina. [The description that he gives is very obscure; but in all the cases which he describes inflammation of the vagina and ulceration of the cervix uteri either were present or had existed, so that these bands were in all probability the cicatrices which are known to result sometimes from inflammation in those situations, and no new and hitherto unknown disease.]

M. Estevenet† relates the very extraordinary case of a woman who, having suffered for two years from uterine symptoms, discharged a large mass per vaginam, which was ascertained to be the whole *body of the uterus* without its appendages, which had been *detached* from its connexions *by a slow process of inflammation*. The woman died on the eleventh day. [The anatomical details are very minutely and carefully recorded, and there seems to be no reason to doubt the correctness of the observation.]

*Polypus uteri.* Dr. Cambernon‡ proposes the strange theory that uterine polypi and fibrous tumours of the uterus result from the entanglement of ova in the uterine tissue, and their undergoing a kind of morbid development in that situation. The correspondence of the age at which these affections most frequently occur with that during which the reproductive system is in a state of activity, and their comparative rarity in virgins are the only facts on which Dr. Cambernon's hypothesis is grounded. Dr. Oldham§ makes some remarks on the mode in which polypi are supplied with blood, and on the source of the hemorrhage which they occasion. He distinguishes two sources of this hemorrhage: the discharge of blood taking place in some cases from the pedicle, in others from the surface of the tumour. He regards the former as the source of the hemorrhage in those cases where the polypus is a fibrous tumour of the uterus pediculated, while bleedings from the surface occur in the cellular or fibro-cellular varieties. Polypi of the former kind derive their supply of blood almost exclusively from that portion of the uterine tissue which forms their investment, and from which arterial trunks proceed,

\* Gaz. Méd. Aug. 31, 1844.

† Gaz. Méd. Février 1844.

‡ Bull. de l'Acad. Roy. de Méd. Aug. 31, 1844.

§ Loc. cit.

and penetrate their substance. The veins, however, though closely collected around these growths, and presenting a considerable increase of size, do not penetrate their substance, and do not extend beyond their pedicle. The fibro-cellular variety, however, presents a very different arrangement; the cells observed in the interior of these polypi being, in Dr. Oldham's opinion, truncated and divided veins, which traverse the whole tumour, freely communicating with each other, and forming a very extensive venous circulation. [It is by no means certain, however, that these canals are venous; the contrary opinion entertained by Meissner, (see his *Frauenkrankheiten*, Bd. i. p. 833,) is much more probable, and the rather since these canals terminate by open extremities, an arrangement which, notwithstanding Dr. Oldham's revival of the old theory that the uterine veins terminate in a similar manner, is quite contrary to all that we at present know of the structure of the vascular system.] A case of spontaneous strangulation of a polypus by the os uteri, and its consequent detachment, is related by Dr. Garden.\* M. Mayor† has twice successfully employed torsion, as recommended by M. Amussat, for the removal of two large uterine polypi; and in neither case did any ill result follow the proceeding. Various modification in the operation of tying polypi are suggested by MM. L. Boyer, Quackenbush, Bedingfield, and v. Watmann,‡ having for their object the easier and more certain application of the ligature. M. Boyer's instrument is rather complicated; the others are very simple, even more so than Gooch's canula; but a description of them would scarcely be intelligible unless accompanied with a drawing. M. Mollet§ relates the history of a woman who had suffered from symptoms of uterine disease for a year, when a tumour appeared beyond the vulva, and increased rapidly in size. It was supposed to be the inverted uterus, and under this supposition a ligature was applied on the fifth day, around the neck of the tumour, and it was then removed by the knife. It was now found that the extirpated uterus had not been inverted at all, but merely drawn down by an immense polypus attached to the os tincae. The patient died on the fifth day after the operation.

*Fibrous tumours.* Dr. Roberts,|| in some remarks on these growths, confirms Dr. Ingleby's remarks with reference to the frequency of hystericalgia as a consequence of their presence. He notices that they have a peculiar predilection for the posterior wall of the uterus, and that though they may disappear under the use of medicine, they have a great tendency to return. He confirms Dr. Ashwell's observations with reference to the utility of iodine in their treatment. Dr. Pancoast and M. L. Boyer¶ have each removed a large fibrous tumour from the uterine cavity; in the former case the operation was attended with success, in the latter the patient died on the sixth day. In both instances the tumour was enucleated partly by the finger, partly by the help of instruments. In M. Boyer's case the tumour had not passed the os uteri, which it was necessary to incise, while in Dr. Pancoast's patient the tumour had passed out of the uterus, and nearly filled the vagina. The different result of the two operations seems to have been greatly dependent on the different relations of the tumours to the os uteri.

*Malignant diseases of the uterus.* Dr. Barbieri\*\* relates a case in which an ill-constructed ring-pessary having been retained for several months, became imbedded in an ulceration of the cervix uteri, and gave rise to symptoms which were supposed to be those of ulcerated carcinoma. The presence of the pessary was not at first detected, but on the removal of the instrument the patient

\* American Journal of Med. Science, April 1844.

† Gaz. Méd. Aug. 17, 1844.

‡ Bulletin de l'Acad. de Méd., Fév. 29, 1844; New York Journal, Jan. 1844; Lancet, May 11, 1844; Oesterr. Med. Jahrb., Jan. Feb. 1845.

§ Annales de Thérap., Janvier 1845.

|| New York Journal, Sept. 1844.

¶ Boston Med. Surg. Journal, Oct. 9, 1844; Revue Médicale, Mars 1845.

\*\* Gaz. Med. di Milano, 29 Giugno, 1844.

speedily got well. Dr. Montgomery\* has removed a cauliflower excrescence of the uterus by means of the ligature, and the patient continued well at the end of two months, having menstruated regularly during that period. He recommends the use of the ligature in the treatment of such cases, since the pain it occasions is comparatively slight, and there is no reason to fear serious hemorrhage after its application, while the good which results from it is almost immediate. He advises that after the separation of the part inclosed by the ligature the wounded surface should be at once touched with some powerful caustic. Dr. Riberit† has published an account of four cases of malignant disease in which he amputated the cervix uteri. All of the patients were under 40, and the disease, which was fungoid rather than pure scirrhus, was not of long standing, though extensive. The disease returned in every instance within three months after the operation, attended with profuse hemorrhage, and had already proved fatal to three of the patients at the time of his communication.

#### DISEASES OF THE UTERINE APPENDAGES.

*Diseases of the ovaria.* Dr. Kohlrausch‡ describes the anatomical structure of an *ovarian cyst containing hair and teeth*. It was made up of many cysts, some of which were filled with gelatinous matter. Others, which had thicker parietes, contained fat, hair, and teeth. The cysts were lined with flattened epithelium scales, below which was a layer of cells not flattened, then a structure resembling cutis, and below that a kind of sub-cutaneous cellular tissue. Hairs were implanted in a perfectly normal manner into this cutaneous tissue, in which there likewise existed greatly developed perspiratory and sebaceous follicles. The teeth were imbedded in a piece of bone in the wall of one of these cysts. They were all inclosed in tooth sacks, and in different stages of development.

Cases of the spontaneous rupture of *dropsical ovaria* are related by Dr. Fraser, Dr. Lambrecht, and M. Canus.§ In the first case the bursting of the sac into the rectum was followed by permanent cure; in the second the patient recovered after it had twice emptied itself at the navel; and in the third case the cyst burst on three occasions into the abdominal cavity, followed each time by the rapid absorption of the effused fluid, and great temporary improvement in the patient's condition. Mr. Brown,|| in two very interesting papers, combats the generally received opinion concerning the uselessness of medicine in ovarian dropsy, and relates five cases in which the plan which he advocates proved very successful. This plan consists in the internal employment of small doses of mercury, and in the use of mercurial frictions to the abdomen, so regulated as to keep the mouth slightly sore for some weeks; and in the administration of diuretics, succeeded by tonics, while the food is light and unstimulating, and daily exercise attended to. The local treatment consists in careful and constant tight bandaging the abdomen with flannel. When these measures appear to have taken effect, by the non-increase or positive decrease of the tumour, he advises that the cyst be then tapped and emptied. After the operation, pads should be applied over the cysts, and tight bandaging should be continued for three weeks, and the friction and medicines for at least six weeks longer. A case is related by Mr. Atkinson,¶ in which a woman, aged 53, was tapped 78 times in seven years and a half, six gallons being drawn off at each of the first 50 operations, but only half that quantity on each subsequent occasion. The interval between the operations, which used to be five months, came at last to be only three weeks, but the patient resumed her usual

\* Dublin Journal, Jan. 1845.

† Gazzetta Medica di Milano, 9 Settembre, 1843.

‡ Müller's Archiv, 1843, Heft iv, p. 365.

§ Montreal Med. Gazette, May 1844; Med. Zeitung, Nro. 30, 1844; Revue Médicale, Nov. 1844.

|| Lancet, May 4, 1844, and April 5, 1845.

¶ Ibid. July 20, 1844.

active habits in a day or two after each puncture. Dr. Hamper\* has recorded the history of a woman in whom ovarian dropsy came on after labour. The patient was treated by mercurial inunction, tight bandaging, and puncture of the cyst through the vagina, with complete success. Dr. Marshall Hall† has suggested that before resorting to any operative measures for the cure of an ovarian tumour, a probe be introduced and passed round it, so as to discover whether or no adhesions exist; also that an exploratory puncture should be made in order to ascertain the nature of its contents. Mr. Cazeaux,‡ in an essay on the treatment of ovarian dropsy, records a case in which permanent cure followed medical treatment and a single puncture of the cyst. He next relates the unsuccessful issue of an attempt to maintain a fistulous opening into an ovarian cyst, fatal peritonitis having been induced. A third instance is detailed in which death from peritonitis followed on puncture per vaginam, and an attempt to keep an elastic canula in the puncture. He states that puncture per vaginam has been performed twelve times; that the details are incomplete in three instances, that three of the patients died, that a relapse occurred once, and that five of the patients were completely cured. He lastly gives the particulars of another fatal case, in which death from peritonitis followed on a modification of the minor operation, the cyst having been only partially extracted, in consequence of the presence of some tumours, which rendered its complete removal impossible.

Four cases of the successful extirpation of the ovary by the small incision are recorded by Dr. F. Bird, Dr. Emiliani, and Mr. Page,§ and three of a successful result following the major operation in the hands of Drs. Bowles, Clay, and Atlee.¶ In the case recorded by Dr. Emiliani, the operation had been performed by his father in the year 1815; the patient had since given birth to five children, two of whom were twins, and was in perfect health at the time of his writing the history of her case. Dr. Clay's patient was sufficiently recovered to return to her home, which was at a considerable distance, fifteen days after the operation. Dr. W. L. Atlee's patient had an attack of intense peritonitis immediately after the operation, but did well eventually. He assumes, in the history he has given, that the tumour was not ovarian, but that it grew from the surface of the uterus, and therefore calls the case one of extirpation of a fibrous tumour of the uterus. This idea did not strike him while performing the operation, but was an after thought [for which there does not appear to be any reasonable foundation.] Dr. J. L. Atlee¶ has published a full account of the case in which he successfully removed both ovaries, and to which reference was made in the last Report. Only one case of failure of the operation has been recorded during the past 18 months. It occurred in the practice of Dr. W. L. Atlee,\*\* the patient dying of peritonitis five days afterwards. Mr. Walne has likewise published the particulars of his two unsuccessful cases mentioned in the last Report. Dr. Churchill, Mr. B. Phillips, Dr. Jeaffreson, and Dr. W. L. Atlee†† have investigated the statistics of the operation, and have drawn up more or less elaborate illustrative tables. The chief results at which they have arrived are here thrown into a tabular form; the former table showing the rate of mortality from both operations in all cases where the extirpation of the ovary was either attempted or actually performed, and the latter the comparative mortality from the two operations in all cases in

\* Oesterr. Med. Wochenschr. July 20, 1844.

† Lancet, March 9, 1844.

‡ Annales de la Chirurgie, Oct. 1844.

§ Med. Gaz. March 22 and Aug. 16, 1844; *Bulletino delle Scienze Mediche di Bologna*. Dec. 1843; and *Lancet*, April 5, 1845.

¶ *American Journal of Medical Sciences*, January 1845, p. 255; *Medical Times*, Feb. 13-22, 1845; *American Journal*, April 1845.

¶ *American Journal of Med. Sciences*, Jan. 1844. *Ibid.* July 1844.

\*\* *Med. Gaz.* Feb. 23, 1844.

†† *Dublin Journal*, July 1844; *Medico-Chirurg. Transact.* vol. xxvii, p. 468; *Med. Gaz.* Oct. 16, 1844; *American Journal*, April, 1845.

which the ovary was removed. Dr. Churchill takes 4 inches, and Mr. Phillips 6 inches as the line of distinction between the major and minor operations.

TABLE I.

Authority.	No. of Cases.	Deaths.	Rate of Mortality.
Churchill	66	24	1 in 2.75 or 36.3 per cent.
Phillips	81	32	1 in 2.50 .. 39.5 ..
Jeaffreson	74	24	1 in 3 .. 32.4 ..
Atlee	101	38	1 in 2.65 .. 38. ..

TABLE II.

Major Operation.			Minor Operation.	
Authority.	No. of Cases.	Rate of Mortality.	Number of Cases.	Rate of Mortality.
Churchill	34	38.2 per cent.	15	13.3 per cent.
Phillips	40	47.7 ..	20	30. ..
Atlee	75	41.2 ..	18	27.7 ..
Average		42.3 ..		23.3 ..

## DISEASES OF THE VAGINA AND EXTERNAL ORGANS.

*Vesico-vaginal fistula.* Dr. Keith\* relates the particulars of two cases of vesico-vaginal fistula of long standing, which were successfully treated by cauterization. The former of these cases is interesting, from the fact that the patient having attempted to close the aperture by a piece of cork, this cork slipped into the bladder where incrustations formed around it, and it constituted the nucleus of a calculus, which it was necessary to remove before treating the fistula. The foreign body in the bladder, however, had to a great extent served the part of a valve in blocking up the aperture, so that during a great part of the twelve months of its sojourn in that organ, the patient had passed her urine by the urethra, and the fistulous opening underwent during this period a very considerable diminution in size. Dr. Keith suggests whether in some cases of large vesico-vaginal fistula an Indian-rubber bag, filled with mercury might not be introduced through the opening into the bladder, where it might act as a valve, and thus favour the contraction of the fistula till it became small enough to cauterize, when the bag might be removed by crushing it and drawing it through the urethra. M. Lallemand† relates an instance of the complete closure of a small vesico-vaginal fistula which had existed for a year by means of the *sonde-airigne*; [see the previous Report, where this method is fully described.] In three other cases that came under his care during the same period this mode of treatment was ineffectual, and M. Serre states that of 15 patients treated in this manner by Prof. Lallemand, 5 died, 3 were made worse, 5 were left in precisely the same condition as before treatment, and only 2 were perfectly cured. Mr. Harrison‡ has described an instance of the successful palliative treatment of a small fistula, by introducing a skein of six threads of silk along the urethra, and through the fistulous aperture. These threads were removed one by one; the fistula having become almost closed; but the patient has never been able to dispense with employing one thread, which she changes every month. Using this precaution, however, not a drop of urine has escaped for the past three years, while for the five previous years she had been utterly unable to retain it. M. Béclard§ attempted to cure a bad case of vesico-vaginal fistula by obliterating the vulva, [as in the unsuccessful case of M. Vidal de Cassis.] For a time the operation appeared likely to succeed, union having been effected to a great extent; but peritonitis came on, which carried off the patient 17 days after the operation. In the discussion

\* London and Edinburgh Monthly Journal, Jan. 1844, p. 13.

† L'Expérience, Sept. 12, 1844.

‡ Provincial Medical and Surgical Journal, June 11, 1845.

§ Bulletin de l'Acad. Roy. de Méd. Feb. 28 and March 15, 1845.



which followed the relation of this case, the operation was condemned by MM. Dubois, Gerdy, and Blandin, who considered that it leads only to a partial success, while its performance is exceedingly hazardous.

M. Deville\* describes an affection almost peculiar to pregnant women, and which he calls *granular vaginitis*, from its resemblance to the granular metritis described by Boivin and Duges. It is a disease of an essentially chronic nature, characterized by the development on the vagina of large, indolent red granulations, sometimes isolated, at other times confluent, occupying a varying extent of mucous membrane, and attended with an abundant, purulent, greenish discharge. The disease has always yielded to lotions of the nitrate of silver. M. Deville appears to be in error in supposing that this affection has been hitherto almost unnoticed, since it has already been described by M. Ricord† under the name of *psorelythris*.

M. Desruelles‡ describes a peculiar affection of the vulva of which he has observed two cases, [and which appear to have approximated closely in their characters to that disease which has been described as *elephantiasis labiorum pudendi*. See Meissner, *Frauenkrankheiten*, Bd. i, p. 248.] The labia were of a pale blueish colour, soft in some parts, but presenting hard nodules in others, though the skin investing them was smooth. They were painless to the touch, as was the mons veneris, which was in a great measure denuded of hair, and presented a rugose mammillated surface, as though formed by flattened tubercles united at their base. The inguinal glands were of a stony hardness. In one case there was suspicion of a syphilitic taint and good appeared to result from the use of mercury, while in the other the disease was not benefited by that remedy.

Dr. Riberi§ relates with great minuteness the particulars of a case in which he extirpated the whole *urethra*, which he supposed to be affected with *scirrhus*, and which had been preternaturally enlarged ever since the patient's 11th year, she being 58 at the time of the operation. Doubt may be entertained as to the nature of the affection, but the minute account given of the difficulties met with in performing the operation cannot fail to be useful to any one who shall hereafter repeat it. It appears from M. Riberi's statement that notwithstanding the complete extirpation of the urethra, the patient could retain or void her urine at pleasure.

### III. ON THE PROGRESS OF KNOWLEDGE WITH REFERENCE TO THE DISEASES OF CHILDREN.

#### I. DISEASES OF THE FŒTUS.

M. Hamel|| enumerates among the causes of the death of the fœtus, an *obese state of the umbilical cord*, by which probably he means the presence of an excessive quantity of the gelatine of Wharton. He conceives that this condition comes on about the fourth month of pregnancy, and that it proves fatal by compressing the vessels of the cord. He advises antiphlogistic treatment of the mother during pregnancy whenever on a former occasion the death of the fœtus has appeared to result from this cause. [The opinions of M. Hamel are by no means adequately supported in his essay by recorded facts.]

Dr. Cormack¶ has published a collection of all the cases in which *intra-uterine cystous disease of the kidney* has existed. He arranges the cases in three classes, according as they resulted from—1st, The presence of hydatid cysts; 2d, Obstruction of the ureters; 3d, The formation of cysts independent

\* Arch. Gén. de Méd. July and August 1844.

† See remarks on M. Deville's essay in Gaz. des Hôp. Oct. 5, 1844.

‡ Arch. Gén. Mars 1844.

§ Gaz. des Hôpitaux, Feb. 25, 1845.

|| Bull. de l'Acad. Roy. de Méd. Feb. 28, 1845.

¶ London and Edinburgh Monthly Journal of Medical Sciences, Aug. 1844.

of either of the above causes. He describes and figures a case of this last variety which came under his own notice. In it a development of cysts takes place in the cortical substance of the kidney which communicate with each other, and thus form a multilocular pouch, while by their pressure they produce absorption of the renal substance. He believes that these cysts are formed by the abnormal development of the cells of the cellular tissue which unites the different parts of the kidney, and that they are consequently independent of hydatid disease, or of enlargement of the pelvis, infundibula, or tubular structure of the organ.

M. Sontag\* has described and delineated a case of *congenital rhachitis* which occurred in the obstetric clinic at Heidelberg. [Schuetze's description and delineation of a similar case ought to have been mentioned in the last Report.† Other instances of this affection are recorded by Graetzer, *Krankheiten des Fötus*, p. 170.]

Dr. Simpson‡ communicates the particulars of two cases of *ichthyosis intra-uterina*—one of which, affecting the face only, was observed by Dr. Lewins; the other by Professor Vrolik. Professor Vrolik's views, with reference to the nature of the affection, coincide with those which had been previously expressed by Dr. Simpson. He thinks that the fissures of the skin are merely a secondary and mechanical result of the tegument not possessing a proper degree of expansibility, and not increasing with the growing dimensions of the fœtus. He conceives, moreover, that the general form of the child depends in these cases on arrest of development, to which as well as to the disease of the skin he refers the ectropium of the eyelids, and the peculiar form of the nose, mouth, and ears observed in these cases. A third case of the same disease is recorded by Dr. Smellie§, in which the child lived seven days, the diseased cuticle having begun to fall off on the second day, and having left the body nearly denuded of epidermis before death took place. Dr. Potts|| observed an instance of *congenital gangrene* of the left foot which caused death on the sixth day after birth. A line of demarcation between the sound and healthy parts formed on the second day above the ankle, and had exposed the bones when death took place. No cause could be assigned for the occurrence; it was not produced by the cord being twisted around the leg. Dr. Watson¶ describes a case of *congenital absence or ulceration of the skin* of part of the right leg and foot, which underwent a gradual process of cicatrization that was completed three weeks after birth. [The case was probably one of congenital deficiency of the skin, not of ulceration of a skin which had previously existed. For instances of this occurrence, see Graetzer, p. 231.]

Dr. Hedrich\*\* relates the history of a woman who having been attacked by measles at the end of her pregnancy gave birth on the fourth day of the disease to a *female child* who was covered with the eruption of measles, and was suffering from catarrh, cough, sneezing, inflamed eyes, &c. but recovered in a few days.

## 2. GENERAL OBSERVATIONS ON THE MORTALITY AND DISEASES OF INFANCY AND CHILDHOOD.

*Infantile mortality.* Dr. Watt†† has published a series of tables to show that the proportions which deaths from certain diseases at given ages bear to the total amount of deaths from those diseases is the same in different cities and countries, though the actual amount of deaths from those diseases may differ very widely. Thus the mortality under 2 years of age, or under 5 years of

\* Diss. inaug. pathologico-anatomica de rhachitide congenita; Heidelb. 1844.

† Symbolæ ad osium recens natorum morbos, &c.; Berol. 1842.

‡ London and Edinburgh Monthly Journal, July 1844.

§ Northern Journal of Medicine, May 1844.

\*\* Neue Zeitschr. f. Geburtsh. Bd. xv. p. 469.

§ Ibid. Dec. 1844.

¶ Ibid. Sept. 1844.

†† Lancet, June 8, 1844.

age from measles, scarlet fever, whooping-cough, &c. bears nearly the same proportion to the deaths from those diseases at all ages, in Glasgow, Edinburgh, New York, and Philadelphia. Mr. W. R. Wyld<sup>\*</sup> makes some observations on the diseases contributing most to infant mortality in Ireland; but the value of his conclusions appears to be much diminished by the probable inaccuracy of many of the returns with reference to the causes of death.

The appendix to the Sixth Report of the Registrar General contains much valuable information with reference to the rate of infantile mortality in the various countries of Europe. It appears from a communication by Dr. Fourgereaud,<sup>†</sup> that the mortality of children is very high at New Orleans, and that the most fatal disease there is the cholera infantum, since of 1106 deaths in infancy, 238 or 21 per cent. arose from this cause. It appears further, that while in Philadelphia there occurs one death from cholera infantum to 862 inhabitants, the proportion in New Orleans is as high as 1 to 375.

*Peculiarities of infantile diseases.* It is not possible to attempt to give an abstract of the very elaborate researches of M. Roger<sup>‡</sup> on the *temperature in health and disease*. The following statements, however, embody some of the more important of his conclusions. Whenever the temperature exceeds 100°·4, whatever may be the state of the pulse and respiration, fever is present, either symptomatic or idiopathic. The temperature may rise as high in the course of local inflammation as in idiopathic fever; and the three diseases in which it reaches the highest point are typhus fever, pneumonia, and meningitis. A great elevation of temperature, as from 104° to 105°·8, when it coexists with but slight acceleration of the pulse, or a pulse not exceeding 100, may be regarded as pathognomonic of typhus fever. It is, however, not easy, especially in young children, to distinguish between enteritis and typhus fever, though if during a number of days the temperature have not been found to rise above 100°, or 102° the disease is probably enteritis; and typhus fever if it have exceeded that degree. Pneumonia may be inferred from a temperature of 104°, or 105°·8 if associated with acceleration of pulse and respiration, while in bronchitis the temperature does not exceed 104°. Diminution of temperature occurring in the interval between two periods of its increase is pathognomonic of meningitis; but in meningitis the temperature never rises so high as in pneumonia; the average maximum being about 102°. All the exanthemata are characterized by great increase of the animal heat, and great frequency of the pulse with moderate acceleration of the respiration. The temperature is highest, and this high temperature, averaging nearly 103°, is most sustained in scarlatina. In smallpox it averages 101°·8; but this temperature sinks after the commencement of the disease, until the stage of maturation, when it again rises, and a direct relation seems to exist between the danger to life and the height of the temperature. In measles the temperature, which on the average does not exceed 101°·2 is highest at the outset of the disease, and afterwards sinks progressively. It bears a direct proportion to the severity of the disease, and intensity of the eruption. In many diseases, such as dropsy, tubercle, whooping-cough, chorea, anemia, rickets, &c. the temperature is not changed. In some affections it is diminished, either partially, as in gangrene or paralysis, or generally, of which induration of the cellular tissue is a remarkable instance, since in that affection M. Roger has found the temperature as low as 86°, and in one instance even as low as 71°·6.

Reference must likewise be made to the extremely good description given by M. Bouchut<sup>§</sup> of the peculiarities which distinguish *febrile disturbance of the system in early infancy*, from similar affections occurring subsequently.

<sup>\*</sup> Edinb. Med. and Surg. Journal, April 1845.

<sup>†</sup> Boston Med. and Surg. Journ. Jan. 1844, p. 321.

<sup>‡</sup> Archives Gén. de Méd. Juillet, Août, etc. 1844; Avril, Mai, etc. 1845.

<sup>§</sup> Manuel Pratique des Maladies des Nouveaux-Nés, 12mo; Paris, 1845.

*Infantile therapeutics, &c.* Dr. J. B. Beck\* has made some remarks on the influence of opium on the infant subject. His observations are for the most part judicious, and especially his advice that laudanum, tinc. camph. co., and Dover's powder, all of which are unvarying preparations, should be used in the treatment of children's diseases in preference to other opiates, such as the syrup of poppies, the strength of which often varies. His remarks, however, apparently result from reading rather than from observation in actual practice. [His denunciation of opium is far too sweeping; and would tend, if acted upon, to deprive the practitioner of a valuable remedy; while no notice is taken of its different action in different diseases.]

Works have been published on the subject of children's diseases by M. Bouchut, Mr. Hood, and Dr. Condie, and M. Meissner's valuable handbook has reached a second edition.† M. Bouchut's work has a more practical character than most French treatises on this subject, and may be regarded as an exposition of the opinions and practice of M. Trousseau. It treats exclusively of the diseases of infancy. Mr. Hood's is not a systematic treatise; but has been written with the object of showing that the share which inflammatory action has in the diseases of childhood has been much overrated, and consequently that antiphlogistic treatment is adopted much oftener than it should be. [This truth is however somewhat overstated, and the book is further remarkable for containing almost no allusion to the post-mortem appearances produced by those diseases the nature of which Mr. Hood discusses.] Dr. Condie's book is little more than a compilation in which the writer has contented himself with quoting the names of authors, without introducing references to their works.

### 3. DISEASES OF EARLY INFANCY.

*Asphyxia and apoplexia neonatorum.* In a paper which, notwithstanding its diffuseness and defective arrangement, contains much valuable matter, Dr. Doherty‡ investigates this subject. He justly objects to the employment of the term asphyxia to designate all varieties of apparent death in infants, the lungs being seldom the centre of the mischief, which in a large majority of cases has its origin in the brain. Of suspended animation from this cause there are two varieties: the first, which results from long-continued pressure on the head is attended with apoplectic symptoms and impairment of the respiratory process; but in the second, which occurs when the pressure on the head, is sudden and violent, the heart's action is immediately arrested. He points out the different treatment which these two conditions require, depletion being indicated in the former, but injurious in the latter. He next remarks that since in children stillborn the same *besoin de respirer* does not exist as in the adult whose respiration has been interrupted, there consequently is not the same necessity for the immediate employment of artificial respiration; but it is better to direct our first efforts to exciting the nervous energy. Death from apoplexy is one of the results of imperfect inflation of the lungs; and congestion of the surface, convulsions, and death, are occasionally noticed in cases where owing to this cause the heart's action has been irregular and tumultuous after birth. The death of the child, when the mother has died from hemorrhage, is owing to the placenta ceasing to oxygenate the blood of the child in consequence of the maternal veins being empty, and thus a kind of syncope of the fœtus is produced. When the child dies from pressure on the cord, if that pressure have not been continuous, the body presents the appearances of congestion; but if the interruption to the

\* New York Journal of Medicine, Jan. 1844.

† Manuel Pratique des Maladies des Nouveaux-Nés, 12mo, Paris, 1845; Practical Observations on the Diseases most fatal to Children, 8vo, London, 1845; a Practical Treatise on the Diseases of Children, 8vo, Philadelphia, 1844; Die Kinderkrankheiten, etc. 8vo, Leipzig, 1845, 2 vols.

‡ Dublin Journal, March 1844.

circulation have been complete, the appearances observed are those of profound syncope, and the blood is found to have deserted the left cavities of the heart, and to be accumulated at its right side, and in the great venous trunks. In conclusion, he examines the effects of injury of the spinal cord of the child during labour, and gives illustrations of the resemblance between cases where that has occurred, and cases of trismus neonatorum. Dr. Walter\* relates a case, apparently authentic, which shows how small is the need of respiration in the new-born infant. A woman gave birth to an illegitimate child, which, since it did not cry, she supposed to be dead, and buried it in a hole 18 inches deep. Over the child was a piece of coarse matting, and above this sand was strewn, though loosely, to the depth of 12 inches. In the cavern thus formed, and in which but a very small quantity of air could have been inclosed, the child was found alive at least six hours after its birth.

Dr. Fairbairn† has described the case of a female infant who died asphyxiated owing to retraction of the base of the tongue so far back into the pharynx, that it pressed on the epiglottis and closed the larynx. This accident was the result of congenital defect of the frænum linguae, and malformation of the lower jaw. In a second case, a similar condition, though to a less extent, existed, and the child was reared by much care and constant watching.

*Cephalhæmatoma.* Dr. Hoffman‡ relates the particulars of a case in which having introduced his hand into the uterus for the purpose of turning a child whose side presented, he detected a cephalhæmatomatous tumour on the left parietal bone. A similar swelling likewise existed on the outer side of the right knee. This latter disappeared in a fortnight; the former was opened on the 12th day, and gave issue to thick blood, the wound healed in 16 days. [Though rare as a congenital affection, cases have nevertheless been observed, such cases are mentioned by Burchard, *De Tumore cranii recens Natorum*, p. 10; and by Graetzer, op. cit. p. 223.] Two cases of cephalhæmatoma are described by Mr. Adams,§ who has appended to this description an account of the affection compiled from different sources, but chiefly from the work of M. Valleix. The writer of this Report has given a description and drawing of a case of external and internal cephalhæmatoma complicated with fissure of the parietal bone, in which the child lived three weeks, and showed no sign of cerebral disturbance till forty-eight hours before its death in convulsions, although a very considerable quantity of blood had been poured out between the skull and dura mater, so as greatly to compress the right hemisphere of the brain. The case, however, was chiefly remarkable, in consequence of a reparative process having commenced on the interior of the skull, precisely similar to that which has often been observed on its outside in cases of external cephalhæmatoma. A bony ring had been formed around the tumour, and its surface was beginning to receive a bony investment by the deposit of numerous osseous plates, between the two layers of the dura mater. The fissure of the parietal bone could not be referred to any injury inflicted after birth, and though the labour had been natural, yet it appears probable that the injury of the bone must have occurred during parturition.||

A case of *facial hemiplegia*¶ in a new-born infant occurred in the clinique of M. Dubois, independently of any instrumental interference during labour. There existed, however, an osseous tumour in the pelvis of the mother, which may possibly have inflicted some injury on the child during labour, so that this case is probably no exception to the general rule, according to which facial paralysis in the new-born child is the result of mechanical violence.

*Trismus neonatorum.* Two cases of this affection, so uncommon in France,

\* Neue Zeitschrift f. Geburtak. Bd. xvi, p. 154.

† Med. Zeitung, 31 Juli, 1844.

‡ Medico-Chirurgical Transactions, vol. xxviii.

† Northern Journ. of Med. March 1845, p. 278.

§ Northern Journal of Medicine, Dec. 1844.

¶ Gaz. des Hôp. Juin 3, 1845.

are related by M. Thore.\* They present nothing remarkable in their history, except the fact that in one instance recovery took place, apparently in consequence of a most profuse bleeding from the bites of two leeches behind the ears, which caused a hemorrhage that was suppressed with great difficulty.

*Induration of the cellular tissue.* M. Roger† observations on this disease are full of interest. In 19 children affected by it the temperature was less than  $91^{\circ}4$ ; in 7 it sank below  $78^{\circ}8$ , and the mean of 52 observations is only  $87^{\circ}8$ . In extreme cases the temperature may sink to  $77^{\circ}$ ,  $74^{\circ}3$ ,  $72^{\circ}5$ , and in one instance it fell as low as  $71^{\circ}6$ . He states that a lowering of temperature precedes the appearance of induration, or at least exists in a very marked degree while the induration is yet very slight. The degree to which the temperature is reduced is always in direct proportion to the degree of the induration, and consequently forms a most important element in the prognosis. In only one case did recovery take place after the temperature had sunk below  $90^{\circ}5$ , though life was often prolonged for several days, notwithstanding a much greater reduction of temperature. The slowness of the pulse and respiration likewise bear direct relation to the lowness of temperature and degree of induration, the former having sunk even as low as 60, the latter down to 16 or 14. In connexion with this subject, he likewise alludes to the condition of the lungs met with in this disease, which though called pneumonia, must, as he observes, differ widely from real inflammation of the lungs, since while in true pneumonia the temperature rises even to  $105^{\circ}8$ , it sinks in the peculiar condition which attends induration of the cellular tissue as low as  $71^{\circ}6$ , and the pulse and respiration become slow instead of accelerated. He regards the state as one of congestion or apoplexy, and expresses the coincidence of his opinion with that of MM. Bailly and Legendre with regard to what they term the "fœtal state" of the lung.

*Icterus neonatorum.* Dr. A. B. Campbell‡ relates three cases of fatal icterus; in two of which the disease depended on congenital absence of the hepatic and cystic ducts; in the third it arose from obstruction of the ductus communis choledochus by inspissated bile. In the first of these cases the icteroid colour of the skin appeared on the day after birth, but the child continued well, though the evacuations were white, until the ninth day. Hemorrhage then took place from the umbilicus, and returned on the following day, when the child died. In this case the gall-bladder was a shut sac, the ducts leading from it being entirely absent, and the blood was tinged with bile. In the second case the symptoms appeared equally early, but no hemorrhage took place at any time. The child wasted while its abdomen enlarged in both hypochondriac regions. Death did not occur till the sixth month; the child having been then attacked with violent diarrhea and vomiting of a fluid, like coffee grounds. The liver was large, the gall-bladder as well as the ducts were absent; the blood and the various tissues were stained with bile. The third case closely resembled the first, hemorrhage from the umbilicus occurred on the seventh day, and returned at intervals till the eleventh, when the child sank into a comatose state and died; the hemorrhage altogether not having exceeded an ounce and a half. In this case all the organs except the liver and spleen were stained with bile, the gall-bladder was full, and the escape of its contents was prevented by a plug of inspissated bile, which occupied the ductus communis choledochus. The brother of this child died at the same age and with similar symptoms.

\* Archives Gén. de Médecine, Juin 1845.

† Ibid. Mai 1845.

‡ Northern Journal of Medicine, August 1844.

## 4. DISEASES OF SUBSEQUENT CHILDHOOD.

## DISEASES OF THE BRAIN, NERVOUS SYSTEM, ETC.

The treatise of Dr. Mauthner\* on diseases of the brain and spinal cord is one of the most valuable works on this class of diseases that has yet appeared, and deserves to take rank with the treatises of Cheyne and Gölis. It is impossible in this Report to give any abstract of its contents, but a few of the more important observations will be noticed under their proper heads.

A treatise on acute hydrocephalus has been published by Dr. Thomas Smith;† but it contains nothing which need call for further notice.

Dr. Hesse‡ has written an essay on the night-terrors of children, which, though very prolix, is by no means destitute of merit. He has evidently observed such cases with much attention, and describes them very faithfully, but has fallen into the error of endeavouring to make an independent disease out of that which is but a symptom of various morbid states of the system. Hence result an unsuccessful effort at minute diagnosis, and a magnifying of small and accidental differences into important distinctions.

*Acute hydrocephalus.* Dr. Mauthner§ insists much on the differences between this disease and *encephalitis*. Encephalitis is an independent, inflammatory disease which may run its course without any accumulation of serum forming in the ventricles. Hydrocephalus acutus is a secondary affection, resulting from various morbid conditions, of which the tuberculous cachexia is the most frequent. This opinion he supports by the detail of numerous cases, which in this as well as in other parts of the work have evidently been well observed and are well reported. He notices a difference in the order in which the symptoms of the two diseases appear, as affording the ground of distinction between them. Sopor and unconsciousness occur at the onset of inflammation of the brain, but do not appear till the close of hydrocephalus. The former runs its course rapidly and progressively; the latter presents distinct intermissions. Rapid emaciation without assignable cause often precedes hydrocephalus, and it may run its course without the occurrence of convulsions, which convulsions are never absent in inflammation of the brain, and emaciation is not observed till an advanced stage of the disease.

Two cases of fatal encephalitis from insolation are recorded by Mr. Whitehead,|| who appends some judicious remarks on the danger of exposing children with their heads uncovered to the rays of the sun.

In the course of some observations on phthisis, M. Trousseau¶ speaks of those granulations of the membranes of the brain which have been supposed to be due to the presence of tubercle. He states that although the brain is examined in all children who die at the Hôpital Necker, yet these granulations are very rarely met with except in cases where cerebral symptoms have existed during life; but they are always found in greater or less number whenever the patient has died from any head affection. He regards them as fibrinous, not tuberculous, in their nature, and distinguishes the recent granulations from those which are chronic. The former are yellow, soft, and exactly like the masses of fibrine so often met with at the base of the brain, while the chronic deposits are precisely like the old granulations which are often found on the surface of other serous membranes. These conclusions, however, do not quite agree with the results of Dr. H. Lebert's\*\* microscopic researches into the structure of these bodies. He describes them as being composed of the following elements: fibrous tissue derived from the serous membrane around them; tubercle corpuscles situated between the fibres of this tissue; a little granular

\* Die Krankheiten des Gehirns und Rückenmarks bei Kindern, 8vo; Wien, 1844.

† On the nature, causes, prevention, and treatment of Acute Hydrocephalus, 8vo; London, 1845.

‡ Ueber das nächtliche Aufschrecken der Kinder im Schlafe, 8vo; Altenburg, 1845.

§ Lib. cit. chapters iii and iv.

|| Medical Gazette, Aug. 23, 1844.

¶ Gaz. des Hôpitaux, Nov. 19, 1844.

\*\* Müller's Archiv, 1844, Heft ii and iii.

matter, and a considerable quantity of a hyaline matter, intermingled with their more solid constituents.

*Hypertrophy of the brain.* Dr. Mauthner's\* researches on this subject are by far the most complete that have yet appeared. He prefaces his remarks by a series of observations on the growth of the brain and the increase of its weight at different periods of childhood. He shows that the weight of the organ is greatly modified by the amount of blood which is contained in its vessels, a fact which he uses in support of the opinion that a degree of vascular congestion short of that which would occasion inflammation often gives rise to hypertrophy of the brain. He distinguishes an active and a passive hypertrophy of the brain, the latter of which is attended with expansion of the cranial bones, enlargement of the head, and all that train of symptoms usually regarded as characterizing the affection. In the active form of the disease the bones do not yield, and the first indication of the affection is afforded by the sudden supervention of some form or other of acute cerebral disease. He notices the difficulty of distinguishing between hypertrophy of the brain and *chronic hydrocephalus*, and lays down the following signs as affording means of discriminating between them.† In hypertrophy the posterior part of the skull is that which is observed first to become unnaturally prominent, and the projection of the forehead occurs subsequently, while the projection of the forehead is one of the first results of chronic hydrocephalus. The fontanelles and sutures are never so wide open in hypertrophy of the brain as in chronic hydrocephalus. The latter affection is usually associated with a generally emaciated condition; the former with a leucophlegmatic habit, and with increased deposits of fat. The constitutional symptoms of the two affections likewise differ; convulsions, sopor, and restlessness attend the early stages of chronic hydrocephalus, while spasmodic affections of the respiration are among the earliest indications of hypertrophy of the brain, but seldom occur until an advanced stage of hydrocephalus.

One case of the unsuccessful puncture of the head in a case of chronic hydrocephalus has occurred in the practice of Sir J. Fife.‡ [Of 60 recorded cases in which puncture of the brain has been performed, 17, or 1 in 3½, had a favorable termination, or, in other words, the recoveries have been to the deaths in the proportion of 28 per cent.]

*Convulsions.* Dr. Mauthner's§ chapter on this subject contains many observations of considerable practical value. He points out the fact that convulsions are a frequent result of febrile disturbance in early childhood, and shows how the tendency to venous congestion, which is so characteristic of early childhood, explains this occurrence. Somewhat similar are the remarks of Dr. Morell|| on the same subject, [though in the form in which he has stated, or rather overstated the facts of the case, he has involved himself in error.] His aim is to show that infantile convulsions are the result of febrile excitement, and that the affection of the brain is in all cases a secondary occurrence. In fever there is increased arterial action on the one side with sluggish venous circulation on the other, connected with imperfect performance of respiration, and a tendency to congestion of the lungs. The imperfect respiration allows the lungs to become congested, and is unfavorable to the return of the blood from the abdomen and head, while the heart by its violent action continues to propel more blood to the brain. The yielding fontanelle relieves the compressed brain for a time, though insufficiently, so that the pressure finally affects the medulla oblongata; respiration is then further impaired, and convulsions result from the spasmodic effort of the voluntary muscles to maintain respiration. Venous blood now pours in rapidly from the extremities to the

\* Op. cit. cap. v.

† Provincial Medical and Surgical Journal, Nov. 27, Dec. 24, 1844.

‡ New York Journal of Medicine, May 1844.

§ Ibid. cap. vii, p. 249.

|| Op. cit. cap. x.



chest ; it is prevented, however, from circulating through the lungs by the suspended respiration, the valves of the veins interfere with its return through the channels whence it came ; it therefore regurgitates into those veins which are unfurnished with valves, and congestion of the head and abdomen is the result.

Dr. Hennis Green\* has recorded the particulars of three cases of what he calls *nervous tremor in children*, an affection unnoticed by any previous writer. It resembled chorea in many respects, but was characterized by a rapid and equable oscillation of the limbs in the direction of flexion and extension, very different from the irregular movements of chorea. One of these cases seemed to have been produced by grief, another by obstruction of the menstrual function, and the third by the poison of lead. They were all unattended by disease of the brain or spinal cord, and were cured by treatment which had reference to the cause that seemed to have produced them. A somewhat similar case is described by Mauthner† under the name of *paralysis agitans*. In this instance, however, it was combined with occasional tetanic seizures, and seemed to depend on an inflammatory condition of the spinal cord.

Dr. Lichtinger,‡ in a series of papers on stuttering, distinguishes those cases which depend on affection of the nervous system from such as result from disease or malformation of the organs of speech or respiration. He distinguishes further *cerebral and spinal stuttering*. In the former, disease of the brain interferes with the efforts of the will, and the activity of the spinal cord preponderates unchecked, unregulated. Spinal stuttering must be referred to morbid action of that portion of the spinal cord situated between the origin of the fifth and seventh nerves, and those respiratory nerves that supply the muscles of the chest and belly. This may be either central, in which the cause exists within the above-named tract of the cord ; or eccentric, in which the cause is seated in some of the reflex nerves, or much more rarely in the motor nerves. He relates two interesting cases of central spinal stuttering, both of which succeeded to injury of the upper part of the spine, and were attended with convulsive movement of some of the limbs. One of these cases terminated fatally, and a post-mortem examination disclosed softening of the upper part of the spinal cord. He notices the frequency of reflex stuttering, in which the affection depends on irritation in some distant organ, and has collected 76 cases of this variety, in three fourths of which the source of irritation was seated in the abdomen.

#### DISEASES OF THE ORGANS OF RESPIRATION AND CIRCULATION, AND OF THEIR APPENDAGES.

*Pneumonia*. One of the most important contributions that has been made of late to our knowledge of infantile disease is the essays of MM. Bailly and Legendre on what is usually termed *lobular pneumonia*. They attack the generally received opinion of the inflammatory nature of this condition, which they regard as analogous to the state described by Jörg as *atelectasis pulmonum*. They conceive that this which they call the "*fœtal state*" of the lung is not invariably congenital, but that it may supervene afterwards under certain circumstances. The following conclusions embody the more important results of their researches. 1. In the bodies of children who have been rachitic, weakly, or exhausted by previous disease, a number of lobules of the lungs are found in a peculiar state of condensation, similar to that of the fœtal lung. 2. This fœtal state, which consists in occlusion of the vesicles, may result from the mere contractility of the tissue, or may depend on congestion of the vascular network exterior to the vesicles. The former is the simple, the latter the congestive form of this affection. The congestive form is usually met with

\* Provincial Medical and Surgical Journal, Feb. 24, 1844.

† Op. cit. s. 441.

‡ Med. Zeitung, Aug. 14, 21, 28, 1844.

§ Arch. Gén. de Méd. Janv., Févr., Mars 1844.

along the posterior border of the lungs, and generally accompanies catarrhal inflammation of the pulmonary vesicles. 3. In either of these forms of the foetal state, insufflation reproduces more or less completely the natural condition of the lobules. 4. Though occasionally met with unassociated with inflammation, yet in by far the majority of cases this condition becomes developed under the influence of catarrh and catarrhal pneumonia. 5. When unattended with catarrh and involving only isolated lobules, this condition cannot be detected till after death, but in the new-born infant it usually affects the lobar form, is attended by the physical signs of deficient respiration, and associated with the absence of all signs of constitutional reaction. 6. It is essentially different from hepatization, is produced by causes which interfere with the free performance of respiration, and is to be treated by remedies the reverse of antiphlogistic. 7. Lobular pneumonia has, strictly speaking, no existence, since the action of inflammation is never confined to a single lobule, as is the case with the foetal state of the lung. *Partial pneumonia* would therefore be a fitter term. 8. Insufflation does not modify the patches of true hepatization, while the bronchi leading to such hepatized nodules are exempt from catarrh; two characters which distinguish partial pneumonia from the lobular engorgements of catarrhal pneumonia. 9. True partial pneumonia is by no means common in children, though when hepatization does occur in children under 5 years of age, it almost always affects the partial form. The statements, therefore, that have been made with reference to the rarity of lobar pneumonia in infancy are correct; but almost all that has been said about the extreme frequency of lobular pneumonia at that age must be taken as referring to the foetal state of the lung. 10. Catarrhal pneumonia consists in the extension of the catarrhal inflammation from the bronchi to the pulmonary vesicles. This inflammation may affect healthy lobules, or those in the foetal state. In the latter case it gives rise to appearances which have led to the supposition that these lobules were the seat of a parenchymatous inflammation. 11. Capillary bronchitis and generalized lobular pneumonia are but two forms of catarrhal pneumonia, which differ according as in the one the catarrhal element or as in the other the lobular congestion predominates. 12. These facts explain why depletion was seldom appropriate in the treatment of what was called lobular pneumonia. [Simple as the process was by which these results were obtained, no one had previously employed insufflation as a means of ascertaining the real nature of lobular pneumonia and carnification of the lung in children. The writer of this Report has repeated the experiments of MM. Bailly and Legendre on many occasions, and can fully substantiate the correctness of their statements. An assertion has been made by M. Bouchut, that even true hepatization may be removed by insufflation;\* in this, however, he is decidedly wrong. The hepatized portion may sometimes be made to assume a brighter colour, but not to resume the texture of healthy lung, as is the case with lung in the foetal state.] Dr. Posner,† in some remarks on the treatment of pneumonia in childhood, observes that the strictly antiphlogistic treatment suitable to the inflammatory affections of the adult, are no longer appropriate in early life. He applies these observations especially to pneumonia, in the course of which an adynamic stage comes on, requiring the discontinuance of other remedies, and the use of wine and stimulants, for the employment of which he lays down clear and sensible directions.

*Hooping-cough.* Dr. Lersch‡ confirms the statements of some previous writers with reference to the existence of small ulcerations about the root of the tongue in hooping-cough. He does not know whether their formation is preceded by the appearance of vesicles in that situation, for he has always seen them having the character of small ulcerations from one to three lines broad,

\* Op. cit. p. 317.

† Journal für Kinderkr. März 1844.

‡ Allg. Med. central Zeitung, Sept. 18, 1844.

slightly excavated, of a circular form, and situated at the insertion of the frænum. He appears to wish to establish an analogy between whooping-cough and hydrophobia, on the somewhat slender ground of the paroxysmal character of the two diseases. and the presence of vesicles under the tongue in hydrophobia, which may be analogous to the ulcerations in that situation in whooping-cough. M. Levrat Perrotot\* recommends the liquor ammoniæ in whooping-cough; but gives no stronger evidence of its utility than is afforded by four imperfectly reported cases, in all of which depletion had previously been practised. Dr. Panck† details the results of trials of various remedies in whooping-cough. In some cases he found hydrochloric acid very useful after the subsidence of the inflammatory stage, especially when the cough was attended with frequent vomiting of diseased mucus from the stomach. He employs the dilute acid in doses of about ten minims every hour. In the same stage of whooping-cough Dr. Golding Bird‡ has employed alum, in doses of two or three grains every four or six hours for a child of 3 years old, and believes that it exerts a specific action on the disease. Dr. Dieudonné§ writes in praise of cochineal in whooping-cough, [an old English remedy, to which Dr. Cajetan Wachtl called attention on the Continent some three years ago; but which, during a very patient trial of its merits at the Infirmary for Children, the writer of this Report found to be almost inert.]

*Retro-pharyngeal abscess.* A well-marked instance of this affection has been related by Dr. O'Ferrall.|| It occurred in an infant aged 4 months, who was saved from impending suffocation by puncture of the swelling, a proceeding which it was necessary to repeat several times. He recommends the use of a bistoury, with a short cutting edge, as a preferable instrument to a trocar, for opening these tumours, since their tough parietes do not very readily yield, and the trocar may strike upon the vertebral column before penetrating their walls.

*Phthisis.* Dr. Hennis Green¶ has drawn up a tabular view of the seat of tubercle in 180 cases of tubercle of the lungs in children. The table is preceded by some remarks on pulmonary phthisis in the young subject, which are confirmatory of the statements of MM. Rilliet and Barthez, but do not contain anything new.

#### DISEASES OF THE ABDOMINAL VISCERA.

*Atrophia ablactorum.* Dr. S. S. Alison\*\* describes a peculiar state of the stomach, which he met with in a child who died at the 3d month, having been weaned when a month old, and subsequently fed with unsuitable food. The child had an insatiable hunger, vomited much, and suffered from abundant feculent diarrhæa. The stomach was only two inches long, and weighed only 3iss. Its walls were thickened, but otherwise healthy, and the duodenum was similarly contracted. He attributes this condition to muscular action, excited by the irritating food which the stomach in a measure rejected, while the rest of the food remained too short a time to undergo changes into chyme or chyle. Dr. Weiss†† recommends in those cases of diarrhæa with rapid emaciation, which come on after weaning, that if it be not possible to procure for the children a good nurse, they should be supplied with raw beef finelyshred, of which they should take two tablespoonsful divided into four parts in the course of 24 hours; the quantity being afterwards gradually increased to as much as they will take. He states that gradual cessation of the diarrhæa, and recovery of flesh, are the results of the treatment. He proposes to experiment on the use of pure osmazome, since he has found in these cases the animal fibre, nearly unchanged in the evacuations.

\* Revue Médicale, Juin 1844.

† Guy's Hospital Reports, April 1845.

‡ Dublin Hospital Gazette, March 1, 1845.

\*\* Medical Gazette, Nov. 1, 1844.

† Oppenheim's Zeitschrift. Feb. 1845.

§ Journal für Kinderkr. Juli 1844.

¶ Medico-Chirurgical Transactions, vol. xxvii, p. 351.

†† J. f. Kinderkr. Feb. 1845.

**Diarrhea.** M. Trousseau\* has made some remarks in one of his clinical lectures on *cholera infantum*, and these observations are reproduced more fully in the work of M. Bouchut.† The anatomical characters of the affection are very minutely described by him. In its treatment he attaches considerable value to the nitrate of silver, and an equally favorable account of its utility in diarrhea both acute and chronic, is given by Dr. Henock,‡ who watched its employment in Professor Romberg's clinic at Berlin.

**Incontinence of urine.** Dr. Delcours§ in the course of some remarks on the nocturnal incontinence of urine in children, recommends benzoic acid and nitrate of potash as two very valuable remedies for the affection. Dr. Delcours employs the nitrate of potash, which was first introduced into practice in these cases by Dr. Young of Chester, in doses of 3 ss daily, for children of 7 years of age. He was induced to try the benzoic acid by its known action on mucous membranes, and relates two cases in which recovery took place during its employment, after both nitre and strychnine had failed.

#### FEVERS.

**Measles.** Dr. Seidl|| describes an epidemic of measles which prevailed in the year 1840, in the district of Zolkiew in Austria. It was extensive and fatal, having attacked 1519 persons out of a population of 32,736, and having proved fatal to 196, or 12·8 per cent. of those who were attacked. Children, especially from the age to 4 to 12, were most frequently affected by it; no one above 40 years old suffered; but many young women were seized by it, either just before or immediately after delivery. The disease made its appearance in the autumn of 1839, but disappeared during the early part of the winter, breaking out again in January 1840, reaching its acme in April and May, and ceasing in September. The milder forms of the disease presented no peculiarity; the severer cases began very tempestuously, and were attended with affection of the pharynx and larynx, or of the brain and its membranes. It was often complicated with diarrhea, which in most cases was followed by no ill consequences, though occasionally it became chronic, and then led to bad results. It was, however, a more fatal complication than that with whooping-cough, which in some instances ran its course nearly simultaneously, and ceased at exactly the same time with the termination of the period of desquamation. Cancrum oris occurred as a sequela of the disease five times, diarrhea frequently, and general dropsy often came on during the stage of desquamation just as it does in scarlatina. When this state of anasarca followed diarrhea, the prognosis was usually unfavorable; but diarrhea appearing subsequently, was in general salutary, and often removed the dropsy. Dr. Cathcart Lees¶ describes some of the more dangerous complications of measles as observed by him during an epidemic which prevailed among the children in the South Dublin Union Workhouse. The children had been much crowded together, and were not in a good state of health when the disease broke out. Of 48 children under 2 years of age, 18 died; of 35 between 2 and 5, 6 died; and of 112 between the ages of 5 and 12, 5 died. Pneumonia was a very frequent complication, especially among the younger children, having been present in 40 out of 48 infants under 2 years of age. The epidemic was likewise attended with a fatal affection of the throat, [which appears to have been very similar to that described by the writer of this Report in the Medical Gazette, for August 25, 1843,] that occasionally appeared as early as the second day of the eruption, though usually at the period of its decline. Some of the cases which presented peculiarities in their course, are related in full; among which are two instances of sloughing of the labia and rectum, similar to those re-

\* Gaz. des Hôp. Fév. 1, 1844.

† Op. cit. p. 210.

‡ Journal f. Kinderkr. Juli 1844.

§ Gaz. des Hôpitaux, Dec. 21, 1844.

|| Oesterr. Med. Jahrb. Dec. 1843, p. 263.

¶ Dublin Journal, Sept. 1844.

corded by the late Mr. Kinder Wood. A dissertation has been published by Dr. Geerstema,\* the aim of which is to prove that measles and scarlatina are only modifications of the same morbid poison. In support of this opinion, he appeals to the statements of previous writers, as also to the evidence afforded by some cases which came under his own observation during an epidemic of measles at Groningen, in 1842. His cases, however, appear to be instances of the supervention of the one disease on the other, rather than to afford evidence of any closer affinity between the two.

*Scarlatina.* Mr. Porter† describes a singular succession of rheumatic symptoms attended by protrusion of the right eye, which succeeded to a mild attack of scarlatina, all of which ceased suddenly on the supervention of pericarditis. Blisters, calomel, opium and colchicum, were succeeded by restoration to health, but the vision of the right eye was lost, and the organ became atrophied. Dr. S. S. Alison‡ has treated of the occurrence of pericarditis in scarlatina, a complication which he thinks has not sufficiently engaged the attention of medical observers. He relates three cases in which he assumes this affection to have existed. The first case was not seen by him until a week before death; three months had then elapsed since the occurrence of scarlatina. The right side of the chest was full of sero-purulent fluid, and 3 vj of a similar fluid were contained in the pericardium, between which and the heart there existed a few adhesions. Neither the second nor third case can be regarded as conclusive, since in neither was there heard any morbid sound; but increased impulse and violent palpitation of the heart are the only grounds on which he supposes it to have existed. Mr. Snow§ calls Dr. Alison's attention to the account which he published of three cases of pericarditis after scarlatina, in the *Lancet* for December 14, 1839. He regards Dr. Alison's assumption of the early occurrence of pericarditis in connexion with scarlatina as unfounded. He conceives the pericarditis to be the result not of the fever, but of the renal disease which succeeds to it; and which may give rise to pericarditis wholly independent of the previous occurrence of scarlatina.

*Variola, varioloid diseases, and vaccination.* Dr. L. Wagner|| describes a very mild epidemic of smallpox in the district of Neufeld, near the Danube. The disease attacked 2509 out of a population of 70,000, who resided in a district containing 20 square miles. Of those who suffered from the disease, 102 only had been vaccinated, and but 9 of these presented well-marked cicatrices. The disease was very mild even in those who had not been vaccinated since the total mortality did not exceed 222 or 8·7 per cent. In all the vaccinated, the disease ran a modified course, and only 1 of them died. In many cases when vaccination was practised in consequence of smallpox having occurred in the house, variola appeared on the 2d or 3d day afterwards, while at the same time the vaccine vesicle ran a perfectly normal course. Dr. Woppisch¶ gives the particulars of an epidemic of smallpox at Zeitz, in 1841, which appear to him to support the opinion of the identity of varioloid and variola. The facts on which he founds his opinion, are that the first two cases which occurred, were cases of varioloid in two vaccinated children, the next in the same house was a case of variola in an unvaccinated child. At the commencement of the epidemic, the vaccinated suffered exclusively from varioloid, the unvaccinated from variola, but as the disease grew more prevalent, varioloid occurred likewise among the unvaccinated. Most of the cases of variola occurred in unvaccinated children under the age of 1 year, not a single vaccinated child under 7 years had true variola, and only 12 a very mild form of varioloid. Up to the

\* De affinitate morbillorum cum scarlatina; Groningæ, 8vo. The writer of this Report has been unable to obtain this essay; and therefore judges of it from an abstract in the *Journal f. Kinderkr.* Aug. 1844.

† Medical Gazette, Feb. 21, 1845.

‡ Oesterr. Med. Jahrb. Nov. 1844.

§ *Ibid.* March 7, 1845.

¶ Med. Zeitung, Feb. 28 and March 20, 1845.

age of 14 indeed, all the vaccinated children who were attacked, had a very mild varioloid; while persons between the ages of 20 and 40, although vaccinated in their infancy, had confluent varioloid closely resembling smallpox. From these facts, Dr. Wagner infers that the varioloid is smallpox mitigated by vaccination. This conclusion, however, is opposed to observations made apparently with equal care by Dr. Fischer\* of Tambach, in the Duchy of Gotha, who observed an epidemic of *varioloid quite independent of smallpox*, but alternating with epidemic scarlatina. He founds his opinion as to the non-affinity of the two diseases, on 1st, the shorter duration of the eruption, the fact that it appeared first on the extremities, and that it was always succeeded by desquamation of the skin. 2d. The absence in its course of any affection of the conjunctiva. 3d. The invariable occurrence of erythema before the eruption, and the fact that the red spots of the early eruption, had not the central hardness of variola. 4th. The absence of smallpox odour, or of the suppurative fever, and the desiccation of the pustules on the 6th, not on the 8th or 9th day after their appearance. 5th. The circumstance that the course of the attack was in no degree modified by previous vaccination. 6th. The very mild character of the epidemic. M. Legendre† has investigated the very difficult subject of the *simultaneous existence of variola and vaccinia*, of which he has observed 10 instances. His conclusions, which are founded on a comparison of 56 observations derived from different sources, are to the effect that vaccination almost always modifies the characters of variola, but that the performance of vaccination in a child previously exposed to the contagion of smallpox, seems to favour the appearance of that disease, though in children above 4 years of age it usually appears in a favorable and greatly modified form. That while vaccination performed during the incubation of smallpox, modifies the characters of that disease, the vaccine vesicle itself is usually modified in a degree directly proportionate to the shortness of the interval between the performance of vaccination, and the appearance of smallpox. When vaccination is performed after the appearance of variola, the vaccine vesicle sometimes runs its course, but does not modify the variola. The practical inference which he deduces, is that in young and weakly children who have been exposed to the contagion of variola, the performance of vaccination only increases their danger, and is therefore to be avoided. Mr. Wyld‡ brings evidence of the *good results of vaccination in Ireland*, from the tables drawn up during the census of that kingdom in 1841. He shows that, notwithstanding the vast increase of the population of Dublin, the deaths from smallpox during the past 10 years have scarcely amounted to half of the number who died from the same cause in an equal space of time during the middle of the last century. He states further that the superiority of vaccination over inoculation is shown by the fact that smallpox mortality is highest in those provinces in which inoculation is most practised, and vaccination least. The proportion borne by smallpox to all other epidemic diseases is—

Leinster ..	1:8-9	Ulster ..	1:5-96	Dublin ..	1:13-79
Munster ..	1:6-6	Connaught ..	1:5-35		

[This, however, is not of itself proof of the rarity of smallpox in Leinster or Dublin. It may result, and in Dublin it doubtless does, in part from the greater frequency of typhus and other epidemic diseases.]

The comparatively small *success of vaccination* in India, has given rise to an inquiry, the results of which are contained in the valuable Report of Dr. Duncan Stewart.§ The chief causes of this want of success may be referred to the heads of—1st. Native prejudice. 2d. The propagation of a spurious disease owing to the carelessness of native vaccinators. 3d. The influence of

\* Casper's Wochenschr. Dec. 28, 1844.

† Arch. Gén. de Méd. Sept. 1844.

‡ Edinb. Med. and Surg. Journal, April 1845.

§ Report on Smallpox in Calcutta and Vaccination in Bengal, 8vo; Calcutta 1844. A fuller notice of this interesting document will be found in the present Number of this Journal.

climate, which for about six months in the year renders the vaccine vesicle imperfect, and for three out of those six months so modifies the virus as usually to render vaccination altogether unsuccessful. 4th. The fact that this influence of climate varies much in different parts of India, coming into operation in some places as early as March, in others not till two or three months later; and the additional fact that a similar variation will take place at the same locality without any known cause. 5th. The existence of some constitutional peculiarity in the natives, which renders them indisposed to the reception of the vaccine virus, or at least interferes with the full development of the vesicle; and renders the protection afforded by vaccination imperfect, as is shown by the fact that smallpox after vaccination occurs in a grave form more frequently in natives of India than in Europeans. In a paper read before the Medico-Chirurgical Society,\* Dr. Gregory mentions some facts which transpired during the smallpox epidemic of 1844, and which show the preservative powers of vaccination in a rather questionable light. He states that the deaths from smallpox in London were during its prevalence as numerous as 60 years ago, that half of the patients who were received into the Smallpox Hospital had distinct cicatrices of vaccination, and that 8 per cent. of them died. Since then at least 7 per cent. of those who have smallpox after vaccination die, while the deaths from inoculated smallpox do not exceed 1 in 500; he is disposed to recommend inoculation as a test of a person's safety more satisfactory than revaccination. He would therefore wish for such a modification of the present government regulations as would allow of the performance of variolous inoculation of persons between the ages of 10 and 20, as a test of the success of their previous vaccination, and of the persistence of its protective power. M. Calosi† makes the assertion, unsubstantiated, however, by confirmatory documents, that of 38,137 inhabitants of Tuscany, vaccinated in infancy whose ages varied from infancy to 34 years, many have been revaccinated without success, and none have contracted variola, though among them are several who have frequently been exposed to its contagion. He hence draws a conclusion adverse to the supposition that the protective power of vaccination becomes impaired by time, and consequently adverse to the practice of revaccination. The question of the degeneracy of the vaccine virus, of the decline of its protective power by the lapse of time and of the utility of revaccination, continues to engage much attention on the continent. Revaccination is still practised annually throughout the whole Prussian army, with a tolerably uniform result, the disease being produced in about 50 per cent. of those who are vaccinated.‡ M. Villaret§ has published an account of a series of revaccinations carried on during four years in a regiment of dragoons. The following are the results which he obtained:

	Number vaccinated.	With success.	Unsuccessfully.
Had had smallpox .. ..	273	183	90
Had been previously vaccinated	848	716	132
{ with success			
{ without certain success	134	94	30
Had not had smallpox, nor been vaccinated	160	150	10
	1405	1143	262

Dr. Condie|| has from various sources compiled tables which yield 133,042 successful revaccinations, and 53,654 spurious vesicles out of 346,583 revaccinations. It further appears that out of 220,818 persons who were revaccinated, 173,659 had perfect cicatrices, 32,418 imperfect, and the remainder had none at all. In 87,399 of these, revaccination was perfectly successful; and on subjecting 61,746 of those in whom it had failed to a second revaccination perfect vaccine vesicles were produced in 9,238. Almost all writers on

\* On Jan. 28, 1845; reported in the Medical Gazette, Feb. 7, 1845.

† *Bulletino dell Scienze Mediche*, Giugno 1844.

‡ The results of the year 1843 are contained in *Med. Zeitung*, April 3, 1844; those of 1844, *Ibid.*, April 9, 1845.

§ *Gazette Médicale*, Mars 2, 1844.

|| *Op. cit.*

the subject agree in advocating revaccination, and likewise coincide pretty nearly in the arguments they adduce in its favour. The late Dr. Forry,\* whose premature death is a loss to medical science, M. Schäffer,† Dr. Losetti,‡ and the candidates for the prize offered by the French Institute for the best essay 'on vaccination and its influence on smallpox,'§ agree on this point. Their main arguments are derived from the fact that while smallpox occurs but seldom after vaccination in children under ten or twelve years, its attacks are much more frequent after this period, and increase both in frequency and severity up to about the age of 35, when the constitution seems to acquire a comparative insusceptibility to the poison of variola. Hence they deduce the practical inference that a second vaccination should be performed at about the age of 15; and its repetition again at 25 has not been without its advocates. Of course there are many facts by which they support their opinion, as well as some objections that might be raised to their inferences, mention of which is prevented by the limits of this Report.

Dr. Fiard|| inquires into the alleged *degeneracy of vaccine virus* by its transmission through many individuals. He is a believer in the reality of this occurrence; the first indication of which he thinks is presented by the diminution in the duration of the eruption as compared with that of an earlier date, and that a difference in the development of the vesicle on the 8th or 9th day is not observed till afterwards. He applies this hypothesis to the vaccine virus of 1836; the vesicle from which runs the same course with that produced by the virus of 1844 up to the 8th day. At the 9th day desiccation of the vesicles of the old vaccine commences, and is complete by the 13th or 14th day, while the new runs its course more slowly and its desiccation is not complete till the 16th or 17th day. He states that a similar difference was observed some years ago between the vesicles resulting from the old Jennerian vaccine, and the then new virus of 1836. Dr. v. Fradeneck¶ has discovered the original *vaccinia* among some cows in part of Carinthia. The vesicles which it produced differed in no respect from those which resulted from the old virus, a fact from which he draws inferences unfavorable to the alleged degeneracy of the vaccine matter.

Dr. Pluskal\*\* gives an account of a series of experiments on *retrovaccination*, which he carried on for several years on a great variety of animals. It appears that it was only in those animals in whom *vaccinia* occurs spontaneously that vaccination was followed by the appearance of characteristic vesicles, and that the experiment succeeded best in those animals which were most nearly allied to the ox tribe. He regards the results of *retrovaccination* when practiced carefully on the cow, as affording a good criterion of the goodness of the lymph, but does not believe in its utility as a means of regenerating a deteriorated virus.

Dr. A. F. Tassani†† relates a very singular history of the apparent *communication of syphilis* to several infants by *vaccinating* them from a child in whom syphilitic symptoms subsequently appeared, though no sign of any such disease existed at the time when vaccination was performed.

Dr. Osbrey‡‡ relates two cases of *gangrenous inflammation of the vaccine vesicle* coming on about the 12th day, and proving perilous, though not fatal to two children, one of whom was 18 months, the other 5 years old. In one of the cases in addition to the local gangrene, sloughing of the mucous membrane of the mouth occurred, attended with hemorrhage from it. Recovery was slow in both instances. No cause could be assigned for the occurrence, as the previous health of both children had been good. [Dr. Osbrey quotes Dr. Labatt as mentioning this accident, but is apparently unacquainted with

\* New York Journ. of Med. Sept. 1844.

† Gaz. Méd. de Paris, 11 Mai 1844

‡ Bull. de l'Acad. Roy. de Méd. Nov. 30, 1844.

\*\* Oesterr. Med. Wochenschr. März 1844.

‡‡ Dublin Medical Journal, March 1844, p. 133.

† Med. Zeitung, March 27, 1844.

§ Revue Médicale, Mars 1845.

¶ Oesterr. Med. Jahrb. Mai 1844.

†† Gaz. Méd. di Milano, Ottobre 14, 1843.



other instances of the occurrence of erysipelas after vaccination. F. de Wuerst, in his dissertation *De erysipellate Neonatorum post Vaccinationem*, Dorpat, 1835, 8vo, mentions twenty cases, and gives references to several recorded by different writers. In none of Wuerst's cases, however, did gangrene occur; the children dying as from ordinary erysipelas.]

#### DYSCRASIE, ETC.

*Scrofula.* The first part of a treatise on scrofula has appeared from the pen of M. Lugol.\* The influence of hereditary predisposition in giving rise to the disease is treated of most fully, and amply illustrated from M. Lugol's large experience. It may be doubted, however, whether due weight is attached to the other causes of this disease. M. Négrier† has published a second account of his experiments on the treatment of scrofula by walnut tree leaves. He states that of the 55 persons treated by this remedy, whose cases he mentioned in his first Report, 34 continue radically cured, and he considers the results of his second series of experiments as fully confirmatory of his former opinion. The action of the remedy is very slow, its use for from 20 to 50 days being requisite before any effect becomes apparent, and its employment seems to have been continued in some instances for 6 or 8 months. He states, however, that relapses are very rare. It acts most slowly in scrofulous swellings of the glands, but very rapidly on diseased bones, or ulcerated surfaces, or in strumous ophthalmia, in which a decoction of the leaves employed as a collyrium is extremely serviceable.

*Rickets.* M. Trousseau‡ strongly advocates the use of the *oleum jecoris aselli*, which he gives in doses of ʒj to ʒiij daily, mixed with sugar or syrup. He looks for some obvious improvement in 8 or 10 days, and for cure in the course of a month or six weeks. He insists much on the observance of a milk diet, and on abstinence from meat during the treatment, and disapproves of all orthopedic proceedings for straightening the limbs.

*Cretinism.* Much interest has been excited by Dr. Guggenbühl's philanthropic efforts to cure this distressing malady. His first Report§ has been published, in which he makes some observations on the affection, and describes his mode of treatment. The period of liability to cretinism extends from dentition to the 7th year. Its curability is greatest during the first two years of its existence, and appears afterwards to be in direct relation to the power of speech. Idiocy and cretinism are by no means synonymous terms, and cretinism does not depend simply on want of cerebral development. A morbid condition of the system generally, allied to struma or rickets is the foundation of the disease, to which the decay of the intellect is superadded. Defective cerebral development is often associated with cretinism, and one remarkable case is related in which the head of a child aged two years and a half, which had measured 15 inches round at the time of its reception into the institution, gained 24 inches in circumference during a sojourn of 30 months upon the Abendberg. The hospital is situated at a height of 3000 feet, in the midst of the Bernese Alps, between the lake of Thun and Brienne. Most of the patients are children under 1 year old. Dr. Guggenbühl's first aim is to improve their physical condition. For this purpose he uses daily bathing in water, impregnated by means of an electro-magnetic apparatus. The *oleum jecoris aselli*, iodide of iron, and quinine are the chief medicines employed. Much importance is attached to keeping the children in the open air. Goat's milk is much used as an article of diet. Great caution is observed in proceeding to the mental education of the patients; and the education of the senses is that which is first attempted. A pictorial grammar by Czech is much used in teaching the elements of speech.

\* *Recherches sur les causes des Maladies Scrofuleuses*; Paris, 1844, 8vo. An English translation has been published by Dr. Ranking.

† *Archives Gén. de Méd.* Fév. 1844.

‡ *Journal de Médecine*, and *Journal f. Kinderkr.* Mars 1845.

§ *L'Abendberg, établissement pour la guérison et l'éducation des enfans crétiens*, 8vo; Fribourg, 1844.

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